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The PHOTOFACT Servicer

August 15, 1949 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ Vol. 6, Nos. 67 & 68

REPLACEMENT OF DISC AND PLATE TYPE CERAMIC CAPACITORS

The disc and plate types of ceramic capacitors are being employed in increasing numbers in television and radio broadcast receivers. This type of capacitor is an outgrowth of the printed electronic circuit which appeared during the war in extremely compact radio control devices for proximity fuses used in radio controlled mortar and anti-aircraft shells.

From the standpoints of conservation of space, economy and reduction in assembly labor, these capacitors are very attractive to the design engineer. Until recently, replacement units were not available through regular radio parts distributors and the units were replaced either by larger sized mica capacitors or by obtaining the exact replacement unit from the manufacturer.

Starting with this PHOTOFACT Folder Set, we are showing replacement listings for disc and plate type capacitors as made by the Erie Resistor Corporation and the Sprague Electric Co. These items are at present obtainable from your electronic parts distributor. The disc types are available in capacitances ranging from .001 MFD. to .01 MFD., both as single and dual units. Special multiple combinations of the capacitors are designed to constitute a major part of the capacitance elements of the circuits connected to the second detector of ac-dc and battery sets. Further details of the multiple capacitors will be covered later in this article.

It is important that the characteristics of this type of capacitor be understood by the service technician, since they cannot be considered as a universal replacement for other types of the same capacitance value. Their major field of application is for coupling units in resistance-capacitance coupled audio and video amplifiers and for non-critical RF, IF and audio bypass requirements.

To achieve the extremely small physical size in the capacitances stated, use is made of a thin wafer of ceramic material having a dielectric constant in the neighborhood of 3000 to 5000. A silver compound is deposited on the surfaces of the ceramic and subjected to a high temperature which reduces the compound to metallic silver. These silver films then act as the plates of the capacitor. Wires are soldered to the silver and the entire unit coated with a phenolic or plastic material which serves to insulate the capacitor and protect it from the effects of highly humid atmosphere. In addition to the plastic coating, a wax treatment is also employed to further improve the stability under conditions of high humidity.

To assist the service technician in determining whether this type of capacitor is suitable for a given replacement, we are listing below the pertinent characteristics of this type of unit:

1. Capacitance Tolerance. The characteristics of the insulating material and methods of manufacture are such that production of units with close capacitance tolerance is not practicable and these units are rated either with a guaranteed minimum value and no specified maximum, or with an average rating and a plus or minus 20% tolerance variation.

For coupling and bypassing applications, close capacitance tolerance is usually not important, and for such uses this type of capacitor finds its greatest application. It is not suitable for use in radio frequency tuned circuits because of its wide capacitance tolerance and also due to the fact that its power factor is higher than other types.

2. Power Factor. The power factor of disc and plate type capacitors employing high dielectric constant material is usually in the range of 2 to 3 percent. For comparison, paper capacitors have power factors of 1% or less, and mica

capacitors are usually found to have power capacitance ranging below .1%.

3. Voltage Rating. The disc and plate type capacitors covered by the replacements listed below have average working voltage ratings of 500 volts maximum and therefore should not be used in high voltage filter circuits.

4. Inductance Characteristic. Disc capacitors excel in this particular, and the inductance is determined in the main by the length of connecting leads, since the unit itself possesses extremely low self-inductance.

5. Capacitance Variation with Temperature. As the operating temperature of the unit is raised from room temperature to 85 degrees centigrade (185 degrees Fahrenheit) the capacitance value drops to about 50% of its value at room temperature. (Over this range paper capacitors exhibit a change of approximately 7%.) For this reason, ceramic units using high dielectric constant material should not be used in critical circuits where the time constant is important or in which drift of capacitance with temperature would be serious. This precludes their use in some critical television circuits.

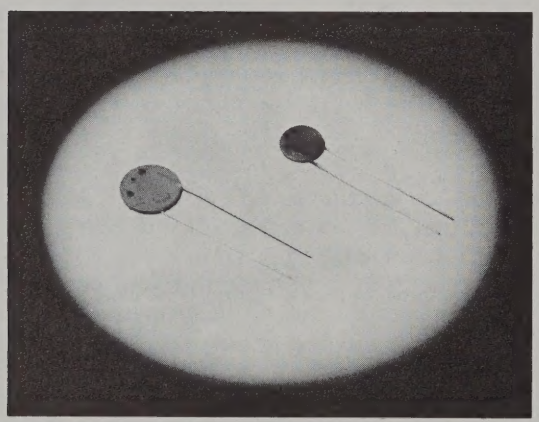


Figure 1

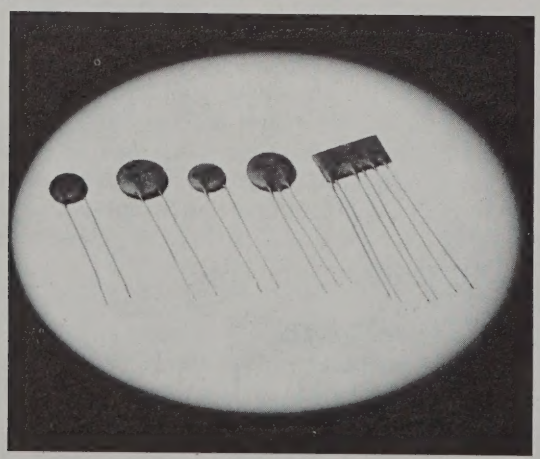


Figure 2

Figures 1 and 2 illustrate typical units of the type discussed as manufactured by the Erie Resistor Corporation and the Sprague Electric Company, respectively. Catalog numbers and ratings currently available are as follows:

ERIE DISC CERAMICONS

Cat. No.	Size	Capacitance Rating
811	19/32-in. diam.	.005 MFD. Min.
821	3/4-in. diam.	.01 MFD. Min.

SPRAGUE HIGH-K DISC CAPACITORS

Single Units

Cat. No.	Size	Capacitance Rating
29C1	19/32-in. diam.	.005 MFD. Min.
29C2	19/32-in. diam.	.002 MFD. Min.
29C3	19/32-in. diam.	.0015 MFD. Min.
29C4	19/32-in. diam.	.001 MFD. Min.
36C1	3/4-in. diam.	.01 MFD. Min.

Dual Units

29C5	19/32-in. diam.	2x.002 MFD. Min.
29C6	19/32-in. diam.	2x.0015 MFD. Min.
29C7	19/32-in. diam.	2x.001 MFD. Min.
36C2	3/4-in. diam.	2x.004 MFD. Min.

PLATE TYPE MULTIPLE CAPACITORS: The plate type units which comprise a group of inter-connected capacitor units, are special purpose and are designed to combine all of the capacitors associated with a certain part of an electronic circuit. A flat plate unit, having six leads, is shown in Figure 2 and is a typical example of such a combination capacitor. This unit was designed for use with the diode-triode or second detector-avc circuits of a typical ac-dc set.

Figure 3 shows this unit installed in an Emerson Model 596A. It is evident from an inspection of this photograph, that this small plate, measuring 1-1/8x5/8x5/32 inches has replaced four much larger capacitors of the conventional type and has not only resulted in space saving, but has made all points of the receiver easily accessible for test measurements and service.

The schematic diagram of this circuit is shown in Figure 4, together with identifying call-outs of its various component parts. An interesting feature of the design is the incorporation of the shield between unit A and the

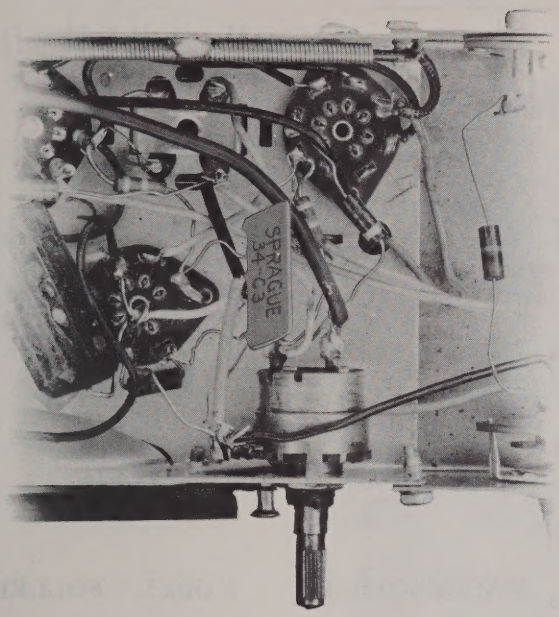


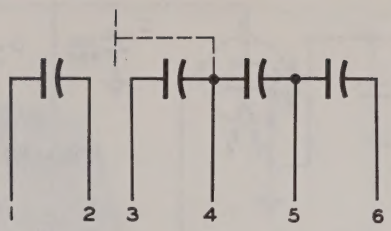
Figure 3

remainder of the capacitor bank. This shield prevents feedback between the output tube circuit and the first audio stage, and also prevents transmission of IF which might cause second harmonic "tweet".

In addition to the unit illustrated, the Sprague Electric Company is currently offering, through their replacement parts line, three other special capacitors, and undoubtedly more will be added as they become popular in receiver design. These four are illustrated schematically in Figure 5. The first unit, or catalog No. 34C3, has been described. Catalog No. 34C4 serves a similar function in battery receivers. No. 34C5 can be used as an interstage unit for resistance-capacitance coupled audio amplifiers, in which a shield is not required. No. 35C6 can be used as a bypass unit for cathode plate and screen returns of an RF or IF stage. In general, units of this type will be required by the service technician as exact replacements or in the construction of custom built equipment.

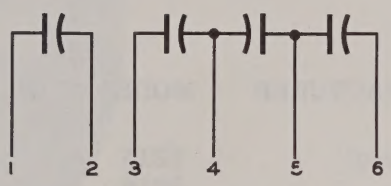
Examples of the application of disc and plate capacitors will be found in the following tabulation of Photofact Folders appearing in this set.

The service technician should carefully study the applications to determine whether these types of capacitors can be employed in servicing earlier receivers which originally employed conventional type units.



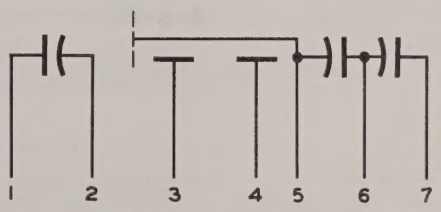
CAT. NO. 34C3

TERM.	MFD.
1&2	.002 $^{+100}_{-25}$ %
3&4	.00022 ±50%
4&5	.00022 ±50%
5&6	.005 $^{+100}_{-25}$ %



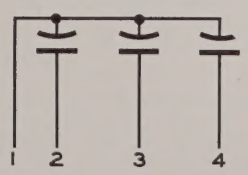
CAT. NO. 34C5

TERM.	MFD.
1&2	.002 $^{+100}_{-25}$ %
3&4	.005 MIN.
4&5	.0001 $^{+75}_{-25}$ %
5&6	.005 $^{+100}_{-25}$ %



CAT. NO. 34C4

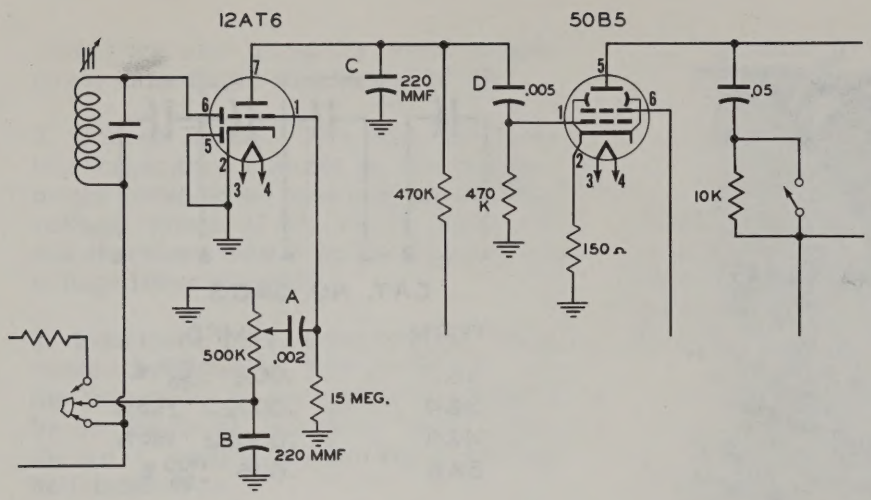
TERM.	MFD.
1&2	.002 $^{+100}_{-25}$ %
3&5	.00015 $^{+100}_{-0}$ %
4&5	.005 MIN.
5&6	.0001 $^{+75}_{-25}$ %
6&7	.005 $^{+100}_{-25}$ %

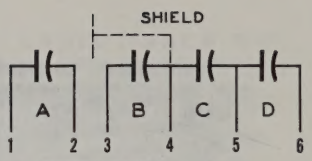


CAT. NO. 34C6

TERM.	MFD.
1&2	.004 MIN.
1&3	.004 MIN.
1&4	.004 MIN.

Figure 4





SPRAGUE
MULTIPLE CAPACITOR
NO. 34C3

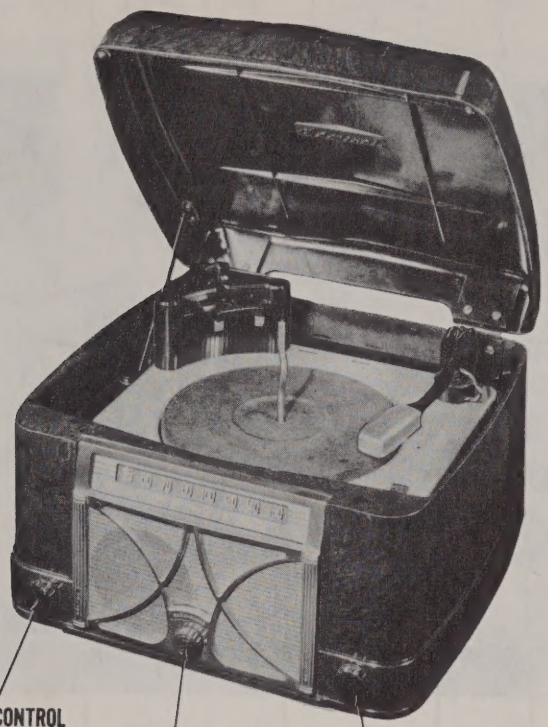
TERM.	CAP.
1&2	.002 MF
3&4	220 MMF
4&5	220 MMF
5&6	.005 MF

Figure 5

MANUFACTURER	MODEL	FOLDER NO.
Admiral	9E15 9E16 9E17 Ch.9E2	2
Aircastle	212	3
Espey	512	8
Firestone	4-A-64 4-A-65	9
Motorola	59F11 Ch.HS-188	12
Regal	FM78	14
*Truetone	D2983	18

*Television Receiver. All others are ordinary receivers.

ADMIRAL
CHASSIS 5T1



ADMIRAL
CHASSIS 5T1

ADMIRAL MODEL 5T12

TRADE NAME	Admiral, Model 5T12 (Ch. 5T1)
MANUFACTURER	Admiral Radio Corp., 3800 W. Cortland St., Chicago 47, Illinois.
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna.
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 DET-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

The calibration marks on the rear of the dial back plate as are follows left to right: Extreme left hand reference for pointer setting, 600KC, 1400KC and 1620KC.

Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	250MMF	High side to rear section of tuning gang. Low side to B-.	455KC	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation.
2.	250MMF	"	1620KC	"	"	A5	Adjust for maximum output.
3.		Loop	1400KC	"	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

ADMIRAL
MODEL 5T12

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amp.	12SK7	12SK7	8N	
V3	DET-AVC-AF	12SQ7	12SQ7	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	150	67A14-1	PRSA-40302	EZ 42215C		DSB-4030 20-150	TA-303	Filter Yellow
B	30	150		PRS150/20			M-25-25	TA-25	Filter Red
C	20	150							Filter Blue
D	20	25							Output Cath. Byp. Green
C2	.1	200	64B1-30	P288-1	GT2P1		ST-2-1	TM-1	AVC Filter
C3	50		65B6-4	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Osc. Grid Cap
C4	250		65B6-5	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	Diode Filter
C5	.05	400	64B1-22	P488-05	GT4S5		ST-4-05	TM-15	Phono Isolation
C6	.18	200	64A2-2	P288-15	GT4P2		ST-4-2	TC-2	Phono Decoupling
C7	.001	600	64B1-15	P688-001	GT6D1	GP2L-001	ST-6-001	TM-21	Audio Coupling
C8	.01	400	64B1-25	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C9	500		65B6-6	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	AF Plate Bypass
C10	.1	200	64B1-30	P288-1	GT2P1		ST-2-1	TM-1	AF Plate Decoupling
C11	.01	400	64B1-25	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C12	.03	400	64B1-23	P488-03	GT4S3		ST-6-03	TM-13	Output Plate Bypass
C13	.18	200	64A2-2	P288-15	GT4P2		ST-4-2	72P2	Line Isolation
C14	.05	400	64B1-22	P488-05	GT4S5		ST-4-05	TM-15	Line Filter
C15	.02	400	64B1-24	P488-02	GT4S2		ST-4-02	TM-12	Tuning Cap Isol. Note

Note. Used Only In Sets With Model Numbers Having A "UL" Suffix.

CONTROLS

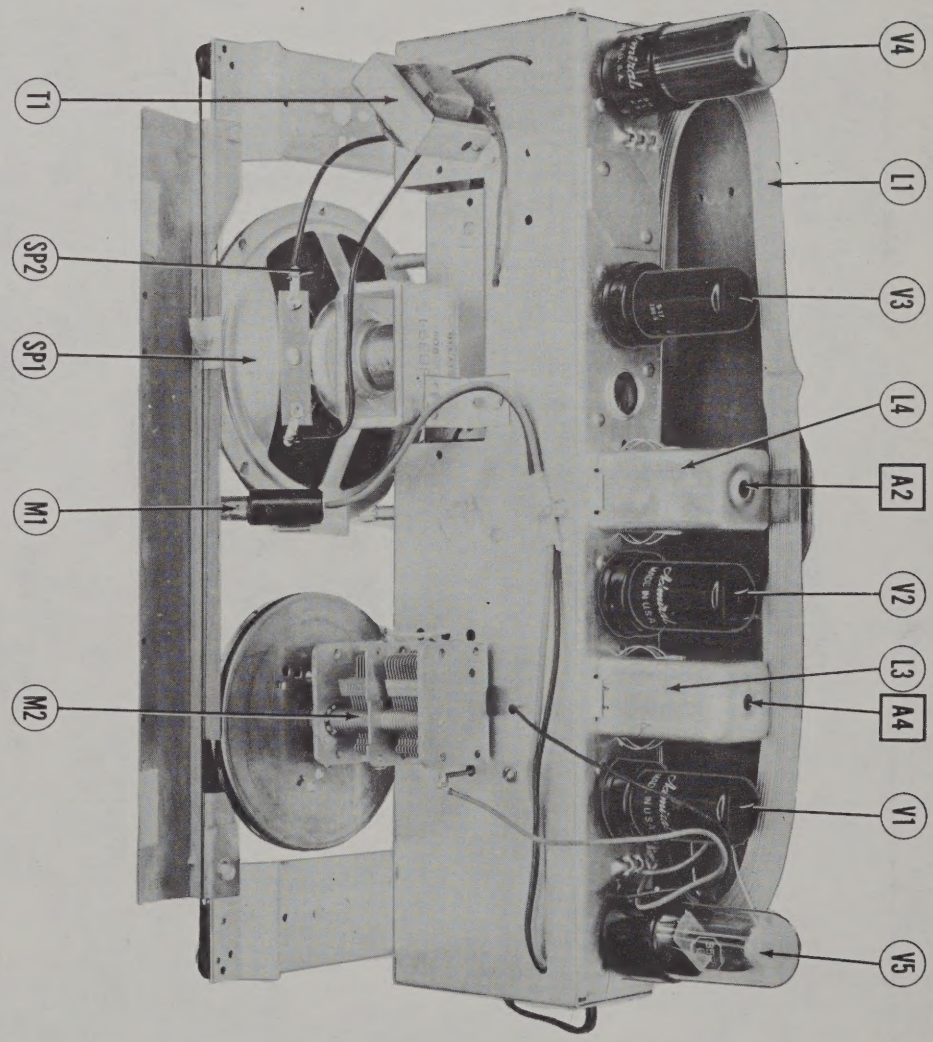
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	75B1-32	Q13-137	AM-63-Z	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions.
C	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	60B8-223	BTS-22K	Osc. Grid
R3	10 Meg.	½	60B8-106	BTS-10 Meg.	AVC Network
R4	1 Meg.	½	60B8-105	BTS-1 Meg.	AVC Network
R5	4.7 Meg.	½	60B8-475	BTS-4.7 Meg	AF Grid
R6	470KΩ	½	60B8-474	BTS-470K	AF Plate
R7	47KΩ	½	60B8-473	BTS-47K	AF Plate Decoupling
R8	470KΩ	½	60B8-474	BTS-470K	Output Grid
R9	150Ω	1	60B14-151	BW-1-150	Output Cathode
R10	150KΩ	½	60B8-154	BTS-150K	Line Isolation
R11	1000Ω	1	60B28-2	BW-1-1000	Filter
R12	220Ω	1	60B28-7	BW-1-220	Filter
R13	33Ω	1	60B28-3		Surge Limiter
R14	22KΩ	½	60B8-223	BTS-22K	Series Phono Cartridge
R15	33KΩ	½	60B8-333	BTS-33K	Phono Isolation See Note

Note. Used Only In Underwriters Approved Model.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ADMIRAL PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2100Ω	3.3Ω	400Ω	.5Ω	79A11-2	A-3876	RO-2	A-2928	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ADMIRAL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD	V.C. IMP.	78B39-1	ST-107 MOD.P5-V	5A1	
	PM	3.3Ω				
SP2	CONE DIA.	V.C. DIA.				
	4-1/2"	9/16"				

R F COILS

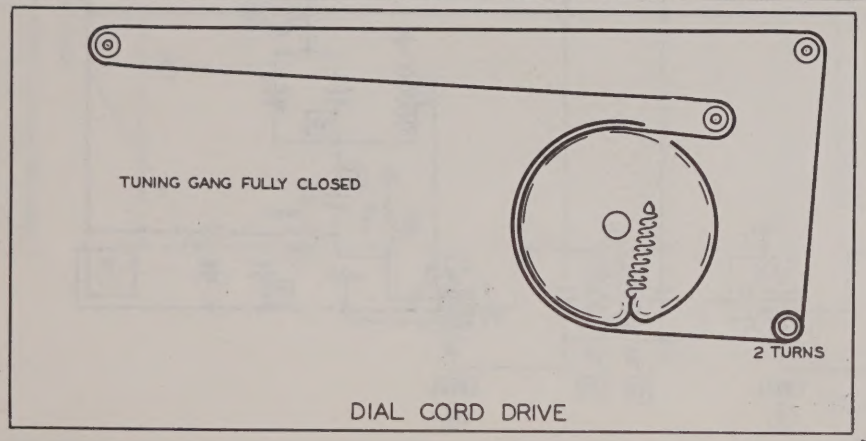
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ADMIRAL PART No.	MEISSNER PART No.	
L1	Loop Ant.	1.5Ω		69B13		
L2	Osc.Coil	6Ω		69A52	14-1060	
L3	Input IF	24Ω	24Ω	72B50		
L4	Output IF	24Ω	24Ω	72B51		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ADMIRAL PART No.		
M1	Bayonet	6-8	.15	Brown	81A18		Type #47

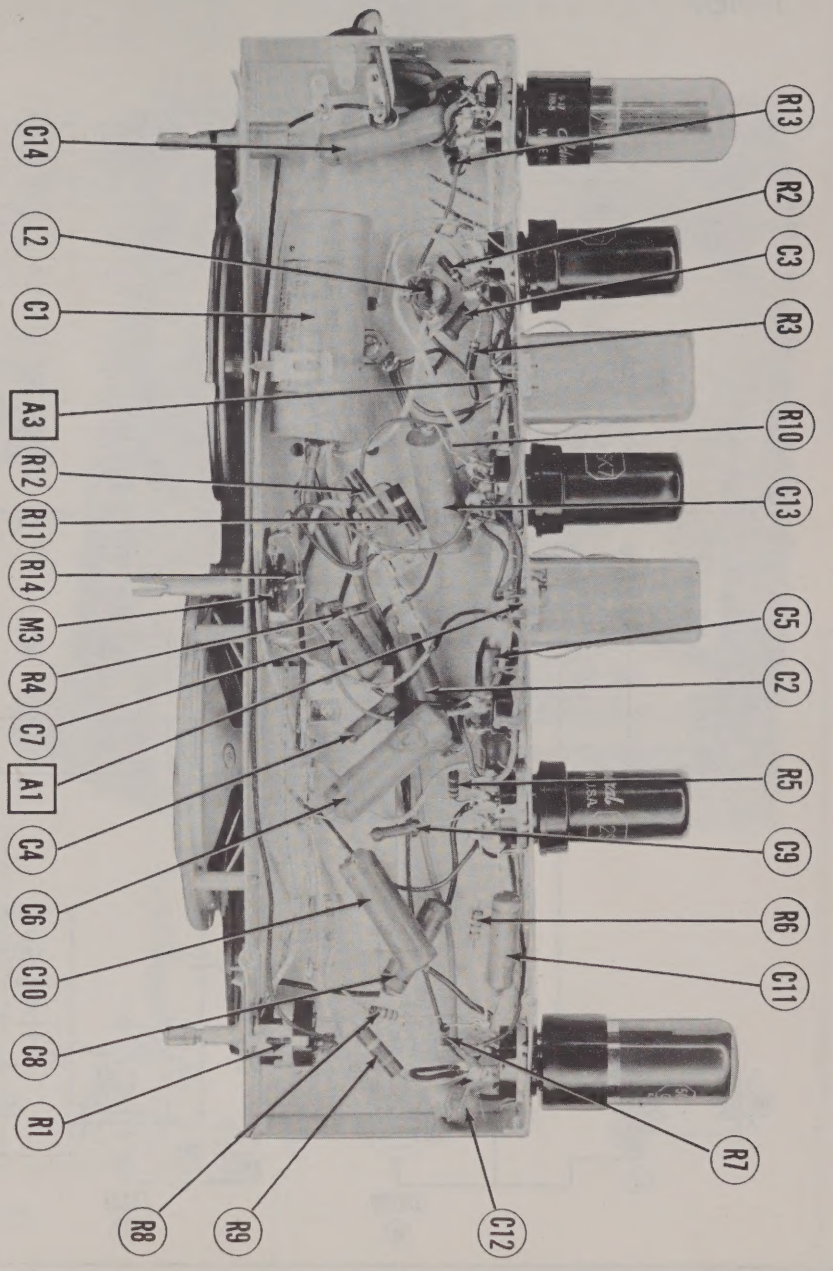
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M2	2 Gang Var. Cap.	68B20-1	(17-447MMF, 19-130MMF)
M3	Switch	77A16-4	Radio-Phono
	Dial Scale	21B35-2	
	Dial Pointer	25A21	
	Knob	33A21-5	Volume and Tuning
	Knob	33A21-9	Radio-Phono

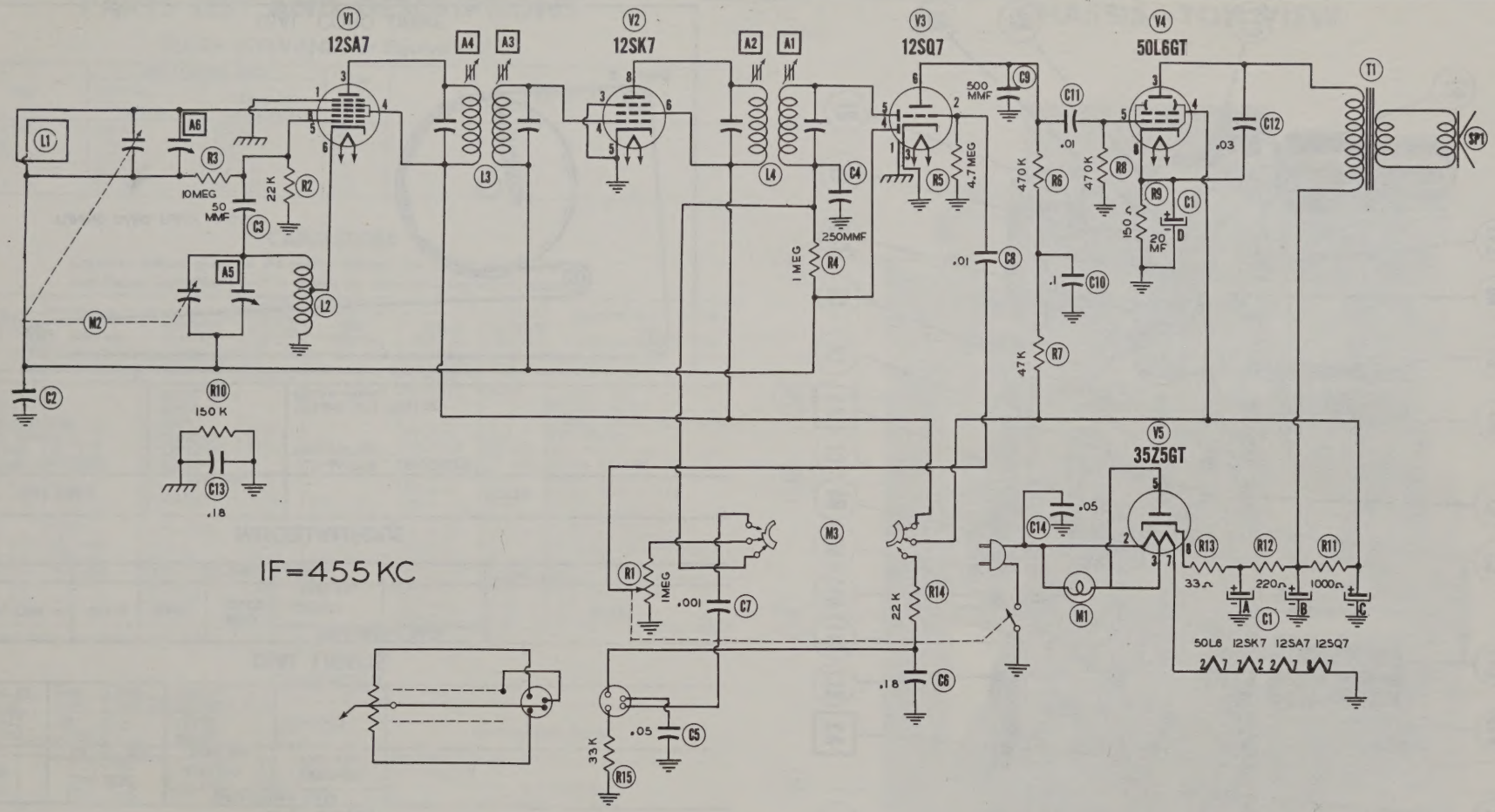


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



ADMIRAL MODEL 5T12



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0V	25VAC	80VDC	80VDC	§-7.4 VDC	0V	12VAC	-.4VDC
V 2	12SK7	0V	25VAC	0V	-.4VDC	0V	80VDC	38VAC	80VDC
V 3	12SQ7	0V	-.4VDC	0V	-.4VDC	-.3VDC	35VDC	0V	12VAC
V 4	50L6GT	0V	85VAC	95VDC	80VDC	0V	75VDC	38VAC	5.1VDC
V 5	35Z5GT	0V	117VAC	111VAC	117VAC	111VAC	114VDC	85VAC	115VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	150KΩ	24Ω	†1.2KΩ	†1.2KΩ	22KΩ	.8Ω	12Ω	1.5 Meg.
V 2	12SK7	150KΩ	24Ω	0Ω	1.5 Meg	0Ω	†1.2KΩ	36Ω	†1.2KΩ
V 3	12SQ7	150KΩ	4.7 Meg	0Ω	1.5 Meg	800KΩ	†500KΩ	0Ω	12Ω
V 4	50L6GT	Inf.	86Ω	†430Ω	†1.2KΩ	470KΩ	†47KΩ	36Ω	150Ω
V 5	35Z5GT	Inf.	112Ω	110Ω	112Ω	110Ω	150KΩ	86Ω	150KΩ

†Measured From Pin 8 Of V5.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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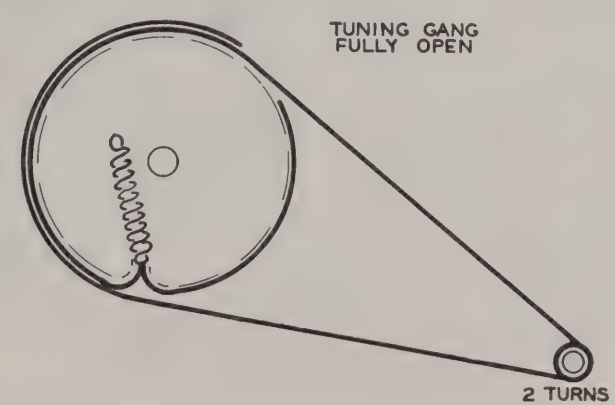
4916-1

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ADMIRAL MODEL 9E15

TRADE NAME	Admiral, Models 9E15, 9E16, 9E17, (Ch. 9E1)		
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois		
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna.		
TUBES(NINE)	Types 12AT7 FM Converter,-AM Osc., 6BA6 FM 1st IF-AM Mixer, 6BA6 FM 2nd IF-AM 1st IF, 6AL5 Ratio Det., 6SQ7 DET-AVC-Phase Inv., 6SJ7 AF Amp., (2) 6K6GT Power Output, 5U4G Rectifier.		
POWER SUPPLY	110-120 Volts AC	RATING:	.75 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC	FREQ. MOD.	88-108MC



DIAL CORD DRIVE

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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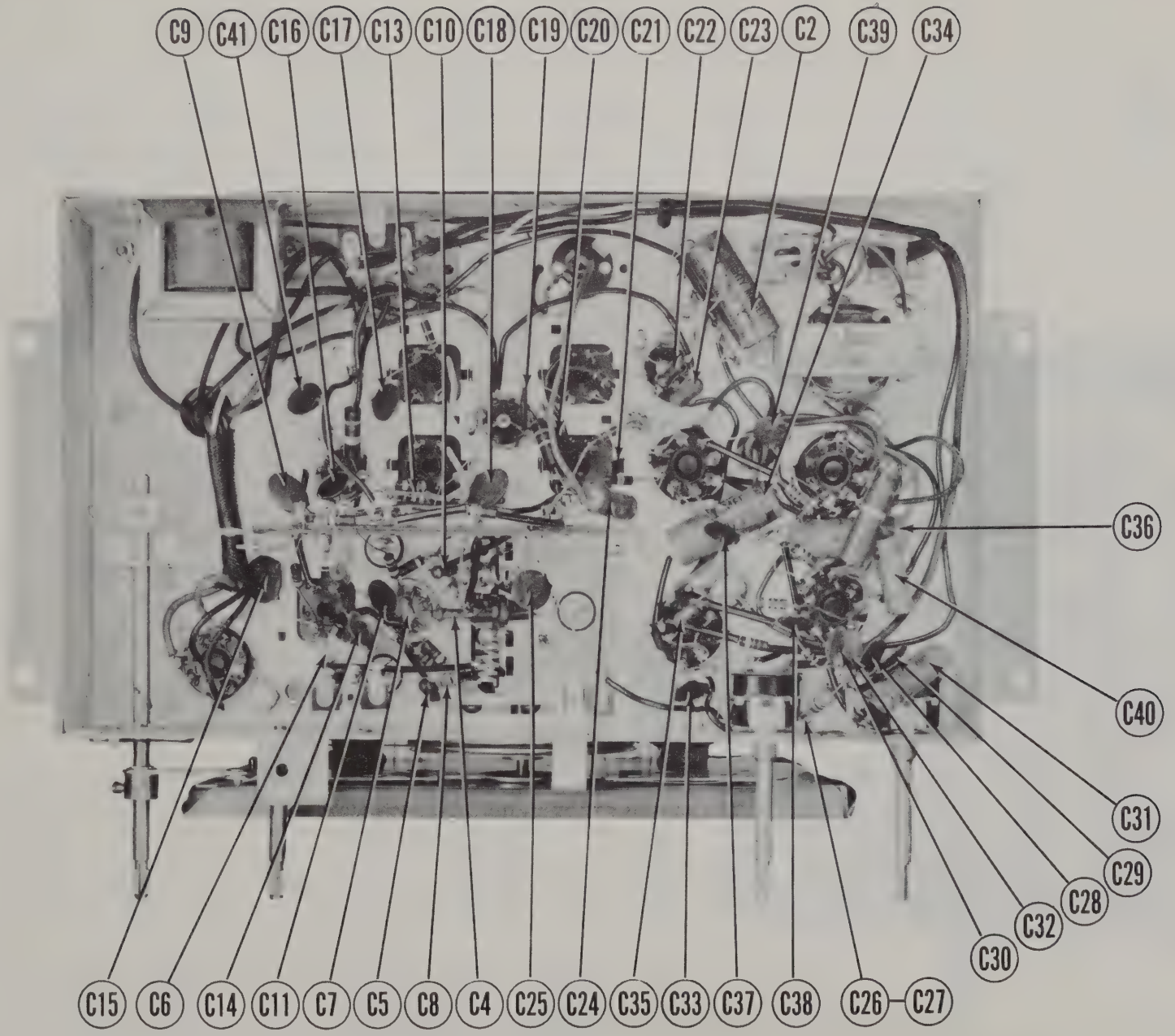
DATE 8/49 4916-2 SET #68 FOLDER #2


C9
C41
C16
C17
C13
C10
C18
C19
C20
C21
C22
C23
C2
C39
C34
C36
C40
C31
C29
C28
C32
C30
C15
C6
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C8
C4
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C24
C35
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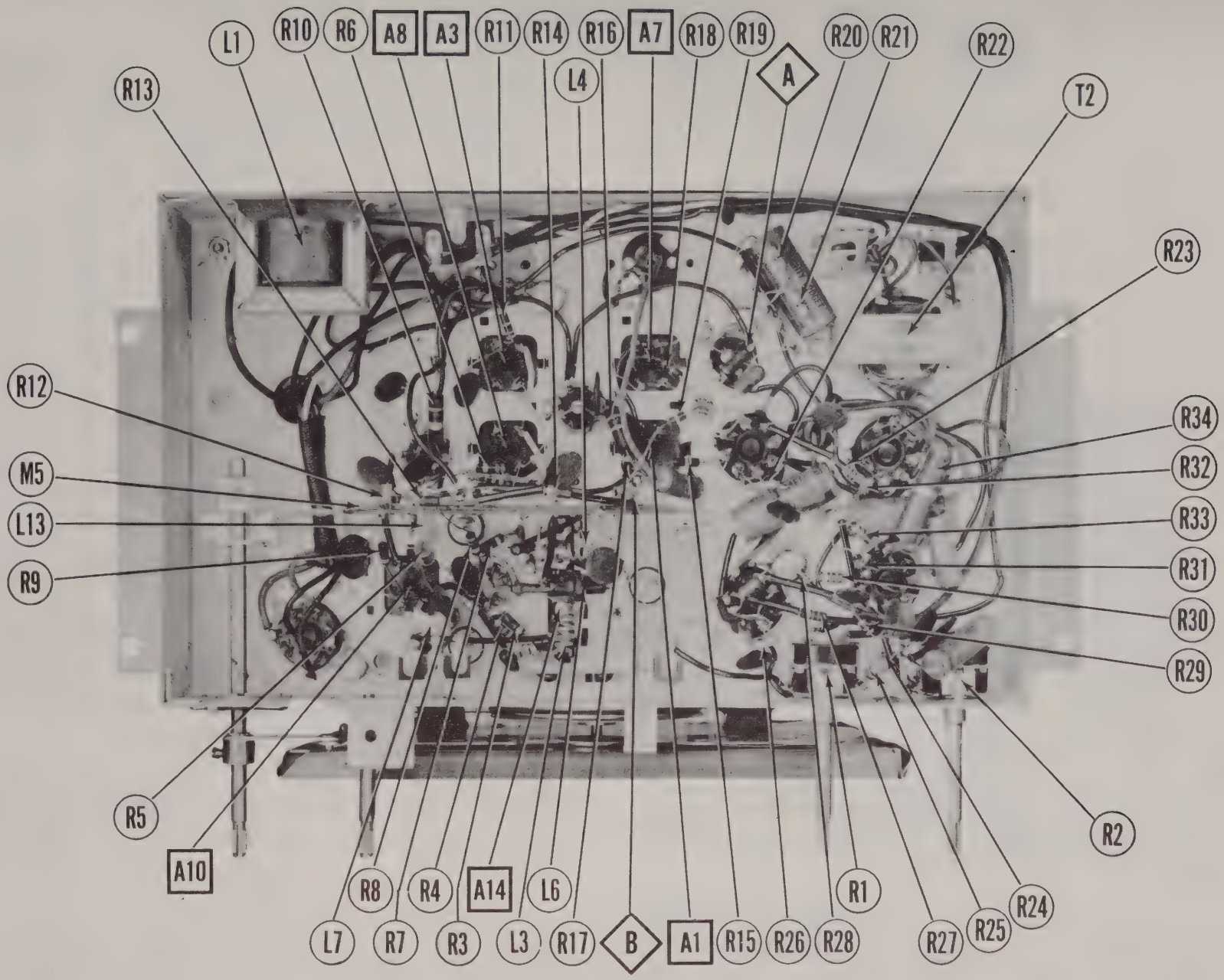
C37
C38
C26
C27


L1
R10
R6
A8
A3
R11
R14
R16
A7
R18
R19
A
R20
R21
R22
T2
R13
L4
R23
R12
R34
M5
R32
L13
R33
R9
R31
R30
R29
R5
R2
A10
R8
R4
A14
L6
R1
L7
R7
R3
L3
R17
B
A1
R15
R26
R28
R27
R25
R24

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	FM Conv.-AM Osc	12AT7	12AT7		
V2	FM 1st IF-AM Mixer	6BA6	6BA6	7BK	
V3	FM 2nd IF-AM 1st IF	6BA6	6BA6	7BK	
V4	Ratio Det.	6AL5	6AL5	6BT	
V5	DET-AVC-Phase Inverter	6SQ7	6SQ7	8Q	
V6	AF Amp.	6SJ7	6SJ7	8N	
V7	Power Output	6K6GT	6K6GT	7S	
V8	Power Output	6K6GT	6K6GT	7S	
V9	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	350	67C6-22	AF88J	UP3345		DY-2x30	EL-330	● Filter
B	30	350					-450		▲ Filter
C2	4	150	67A4-2	PRS150/4	BR415		M-4-150	UT-41	Stabilizing Cap
C3	7		65B6-45						Fixed Trimmer
C4	2000		65B9-38	1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	RF Coupling
C5	1000		65B6-41	1468-001	1W5D1	GP2L-001	MW.5-21	1FM-21	FM Conv. Cath. Bypass
C6	40		65B6-22	1469-00004	5R5Q4		MOS.5-44	MS-44	Fixed Trimmer
C7	2		65B6-58			NP0K-3			Osc. Coupling
C8	35		65B6-57	1468-0Q004	5W5Q4	GP1K-50	MO.5-44	1FM-44	RF Coupling
C9	10000		65A10-3	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	AVC Filter
C10	50		65B6-4	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Osc. Grid Cap
C11	5000		65A10-1	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Osc. Plate Bypass
C12	10	500	65B6-44	1469-00001	5R5Q1	NP0K-10	MOS.5-41	MS-41	Fixed Trimmer
C13	5000		65A10-1	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	AM Mixer Cath. Bypass
C14	10000		65A10-3	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	FM Conv. Plate Decoupling
C15	10000		65A10-3	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	AVC Filter
C16	10000		65A10-3	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	FM 1st IF Screen Byp.
C17	10000		65A10-3	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	FM 1st IF Plate Dec.
C18	10000		65A10-3	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	AVC Filter
C19	10000		65A10-3	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	FM 2nd IF Screen Byp.
C20	10000		65A10-3	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	FM 2nd IF Plate Dec.
C21A	100		Note 1	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Filter
B	100		Note 1	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Filter
C22	100		65B6-7	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Load Cap Note 2
C23	100		65B6-7	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Load Cap Note 2
C24	.002	600	64B1-14	P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	De-emphasis
C25	5000		65A10-1	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Audio Coupling
C26	200	500	65B9-14	1468-0002	5W5T2	GP2K-200	MO.5-32	1FM-32	Tone Compensation
C27	100		65B6-3	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Tone Compensation
C28	5000		65A10-1	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Tone Compensation
C29	5000		65A10-1	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Tone Compensation
C30	10000		65A10-3	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Tone Compensation
C31	.02	400	64B1-24	P488-02	GT4S2		ST-4-02	TM-12	Tone Compensation
C32	5000		65A10-1	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Tone Compensation
C33	5000		65A10-1	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Audio Coupling
C34	.1	400	64B1-20	P488-1	GT4P1		ST-4-1	TM-1	AF Screen Bypass
C35	100		65B6-3	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	AF Plate Bypass
C36	.1	400	64B1-20	P488-1	GT4P1		ST-4-1	TM-1	AF Plate Ded.
C37	10000		65A10-3	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C38	10000		65A10-3	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C39	10000		65A10-3	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C40	.002	600	64B1-14	P688-002	GT6D2		ST-6-002	TM-22	Output Plate Bypass
C41	10000		65A10-3	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	RF Bypass

Note 1. Items C21A, C21B, And R35 Are Combined Into One Unit Obtainable Under Mfgr's Part No. 63A3-1.

Note 2. When Either Item C22 Or C23 Are Replaced, Replace Both With Capacitors Of Equal Value.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	V.C. IMP.		ST-101*		* Replace Output Trans. To Match 6-8Ω voice coil
SP1	PM	3.1Ω	78B44-1	MOD.P12-T	12A4*	
	CONE DIA.	V.C. DIA.				
SP2	11-7/8"	1"				

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
L1	.112A	130Ω	45H	74A13	C-2303#	R-8120	C-2991†	#Drill One New Mounting Hole. †Drill New Mounting Holes.

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: MEISSNER PART No.
L2	FM Dipole Ant.			AB128	
L3	FM Ant.Coil	0Ω		69A83	
L4	FM Osc.Coil	0Ω		69A81	
L5	AM Loop Ant	1.2Ω		69C90	
L6	AM Osc.Coil	5.5Ω		69A88-1	
L7	RF Choke	0Ω		73A2-3	
L8	FM 1st IF	.7Ω	.2Ω	72B77	
L9	FM 2nd IF	2Ω	.1Ω	72B78	
L10	AM 1st IF	10Ω	10Ω	72B79	
L11	Ratio Det.	2Ω	.1Ω	72B39	
L12	AM 2nd IF	10Ω	10Ω	72B80	
L13	Fil. Choke	0Ω		73A2-3	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA	NOTES
M1 Thru M3	Bayonet	6-8V	0.15A	Brown	81A 1-8		Type #47

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
M4	409A11		

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M5	Switch	77B24	Band
M6	2 Gang Var. Cap.	68B25	(35-545MMF, 21-162MMF)
A13	Trimmer	66A19-2	FM Osc. Adj.
	Dial Crystal	24B9	
	Dial Pointer	A1487	
	Cabinet	35E73-4	Model 9E15
	Cabinet	35E73-5	Model 9E16
	Cabinet	35E73-6	Model 9E17

PARTS LIST AND DESCRIPTIONS

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	1 Meg.	½	75B3-6	Q18-137XX		Volume control tapped @ 350KΩ and 500KΩ
B	Switch		Not Req.	76-1		Attach to R1A per instructions
R2A	2 Meg.	½	75B1-33	Q13-139	AM-66-4	Tone control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R2A per instructions
C	Tone SW		Not Req.	76-2	SW-A2	Attach to R2A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ADMIRAL PART No.	IRC PART No.	
R3	1 Meg.	½	60B8-105	BTS-1 Meg.	FM Conv. Grid
R4	470Ω	½	60B8-471	BTS-470	FM Conv. Cathode
R5	27KΩ	1	60B14-273	BTA-27K	FM Conv. Plate Decoupling
R6	470Ω	½	60B8-471	BTS-470	AM Conv. Cathode
R7	22KΩ	½	60B8-223	BTS-22K	Osc. Grid
R8	4700Ω	½	60B8-472	BTS-4700	Osc. Plate
R9	1.5 Meg.	½	60B8-155	BTS-1.5 Meg.	FM 1st IF Grid
R10	27KΩ	1	60B14-273	BTA-27K	FM 1st IF Screen
R11	4700Ω	½	60B8-472	BTS-4700	FM 1st IF Plate Decoupling
R12	1.5 Meg.	½	60B8-155	BTS-1.5 Meg.	AVC Network
R13	1 Meg.	½	60B8-105	BTS-1 Meg.	AVC Network
R14	1 Meg.	½	60B8-105	BTS-1 Meg.	AVC Network
R15	220KΩ	½	60B8-224	BTS-220K	Diode Load
R16	27KΩ	1	60B14-273	BTA-27K	2nd IF Screen
R17	4700Ω	½	60B8-472	BTS-4700	2nd IF Plate Decoupling
R18	390Ω	½	60B8-391	BTA-390	Balancing
R19	27KΩ	½	60B8-273	BTS-27K	De-emphasis
R20	6800Ω	½	60B7-682	BTS-6800-5%	Ratio Det. Diode Load
R21	6800Ω	½	60B7-682	BTS-6800-5%	Ratio Det. Diode Load
R22	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	Phase Inv. Grid
R23	470KΩ	½	60B8-474	BTS-470K	Phase Inv. Plate
R24	47KΩ	½	60B8-473	BTS-47K	Tone Compensation
R25	10KΩ	½	60B8-103	BTS-10K	Tone Compensation
R26	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	AF Grid
R27	1.5 Meg.	½	60B8-155	BTS-1.5 Meg.	AF Screen
R28	330KΩ	½	60B8-334	BTS-330K	AF Plate
R29	47KΩ	½	60B8-473	BTS-47K	AF Plate Decoupling
R30	1.5 Meg.	½	60B8-155	BTS-1.5 Meg.	Feedback
R31	4700Ω	½	60B8-472	BTS-4700	Output Grid See Note
R32	270KΩ	½	60B8-274	BTS-270K	Output Grid
R33	270KΩ	½	60B8-274	BTS-270K	Output Grid
R34	270Ω	2	60B20-271	BW-2-270	Output Cathode
R35	47KΩ	½	Note 1	BTS-47K	Diode Filter

Note. Some Models Use A 270KΩ Resistor In This Application Replacement Same As Item 32.
Note 1. Items C21A, C21B And R35 Are Combined Into One Unit Obtainable Under Mfgr's Part No. 63A3-1.

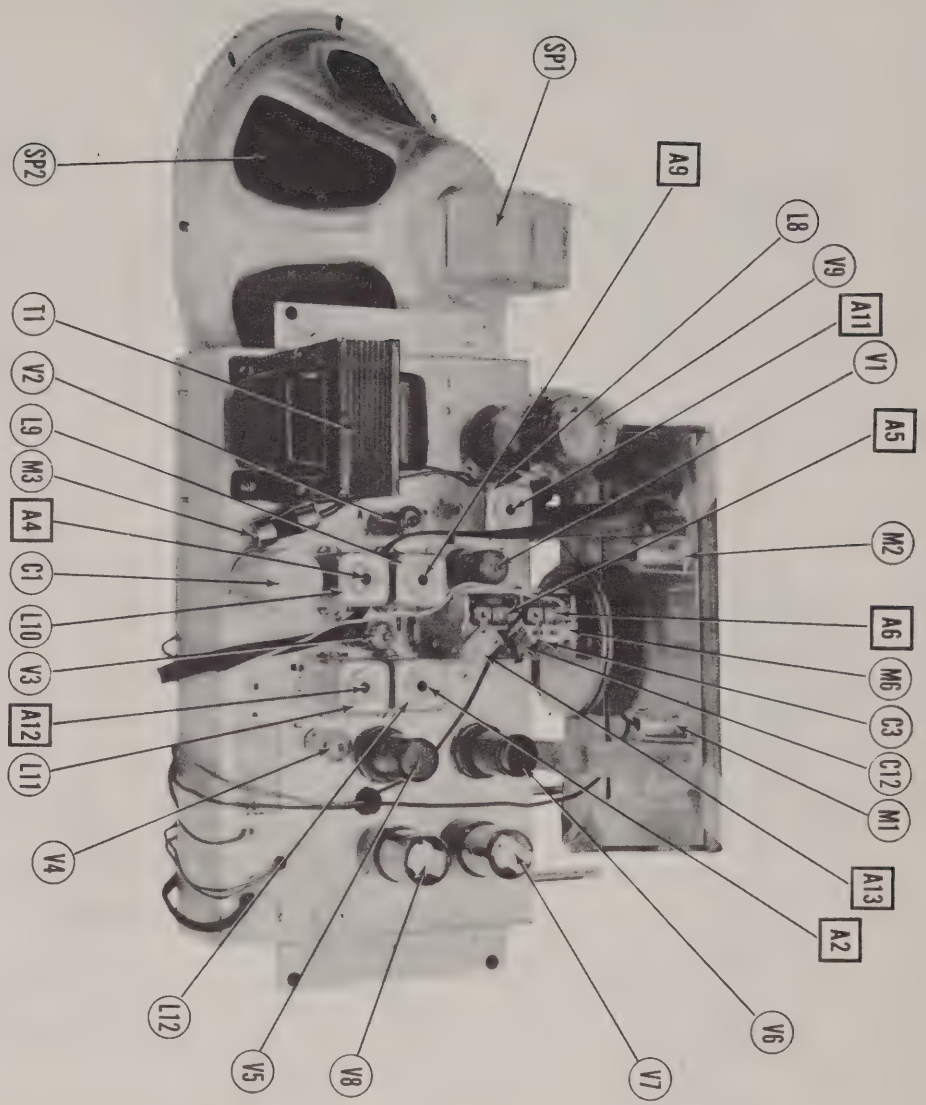
TRANSFORMER (POWER)

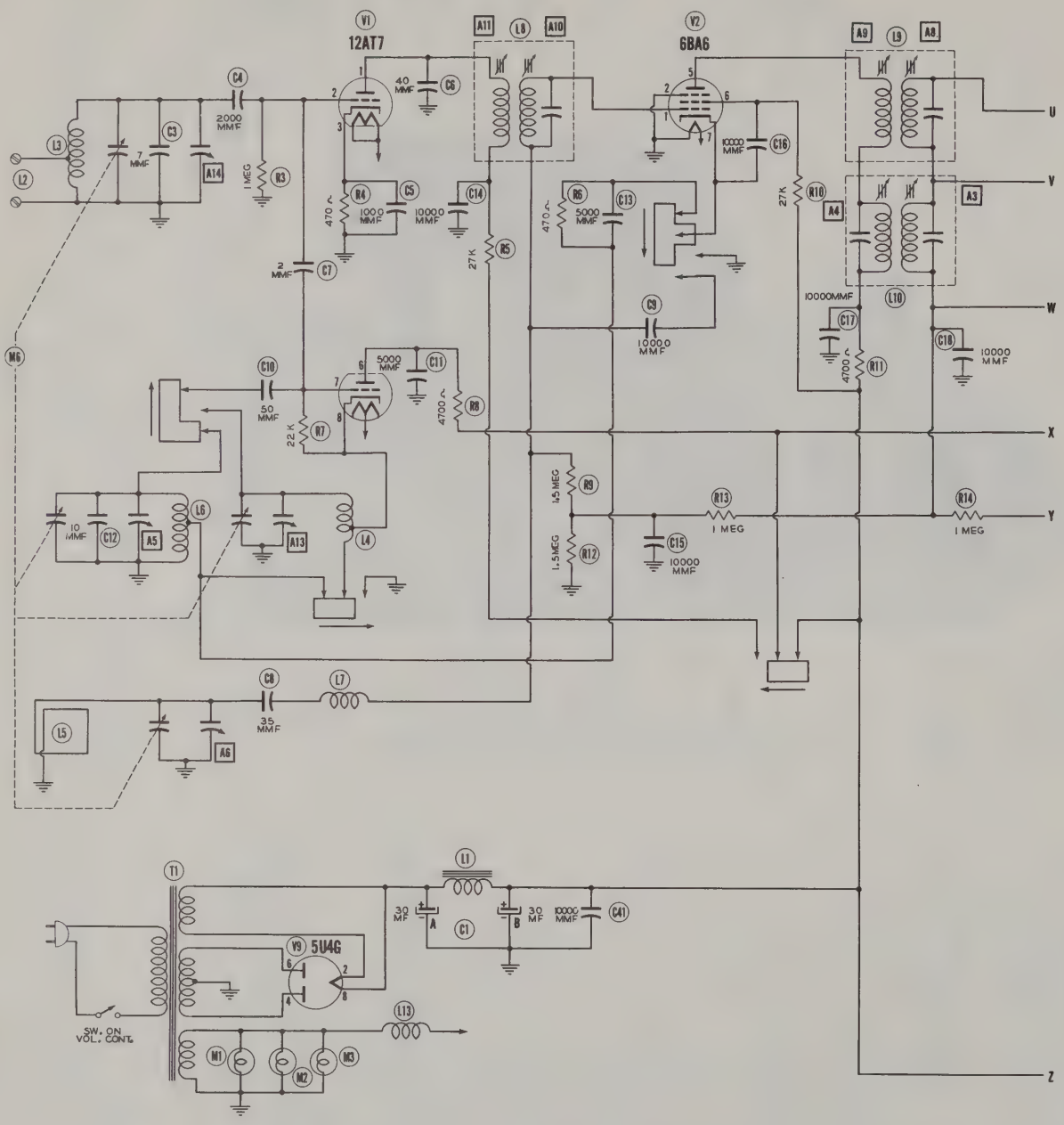
ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	ADMIRAL PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	117VAC @ .75A	500VCT @ .112A DC	5VAC @ 3A	6.3VAC @ 3.1A	80B9	P-4080‡	PV-120‡	P-3153‡

‡Drill New Mounting Holes.
Add Series Resistor To Reduce Plate Voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ADMIRAL PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	10.5KΩ	3.1Ω	630Ω	.6Ω	79A16	A-3823	RO-303	A-2936	





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡	V1A 12AT7	160VDC	0V	1.6VDC	6.5VAC	6.5VAC	220VDC	§-4.2VDC	0V	TOP CAP 0V
	B 12AT7	0V	-.2VDC	0V	6.5VAC	6.5VAC	220VDC	§-6.8VDC	0V	TOP CAP 0V
	V2 6BA6	0V	0V	0V	6.5VAC	230VDC	175VDC	5.4VDC		
	V3 6BA6	-.3VDC	0V	0V	6.5VAC	200VDC	110VDC	0V		
‡	V4 6AL5	1.3VDC	-.4VDC	0V	6.5VAC	-.1VDC	0V	4.5VDC		
	V5 6SQ7	0V	-1.6VDC	0V	-4.6VDC	-4.6VDC	95VDC	0V	6.5VAC	
	V6 6SJ7	0V	0V	0V	-.7VDC	0V	20VDC	6.5VAC	75VDC	
	V7 6K6GT	0V	6.5VAC	260VDC	270VDC	-.5VDC	240VDC	0V	19VDC	
	V8 6K6GT	0V	6.5VAC	260VDC	270VDC	0V	0V	0V	19VDC	
	V9 5U4G	0V	280VDC	0V	250VAC	0V	250VAC	0V	280VDC	

‡ Taken in FM position.
§ Taken with vacuum tube voltmeter.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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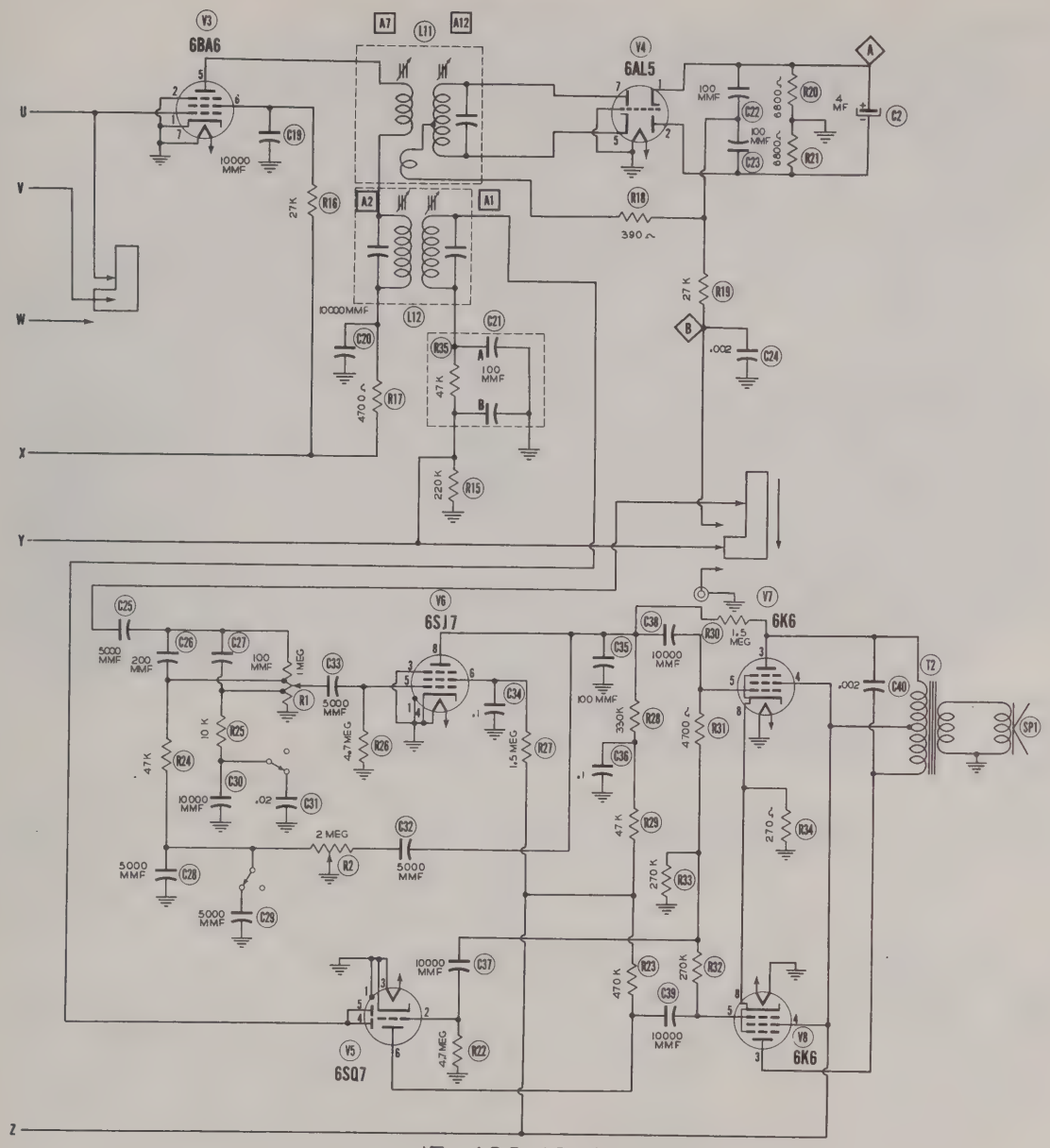

IF=455 KC AM

IF=10.7 MC FM

RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡	V1A	12AT7	*29KΩ	1.2 Meg.	470Ω	.2Ω	.2Ω	*5.2KΩ	22KΩ	0Ω	TOP CAP 0Ω
	B	12AT7	Inf.	1.2 Meg.	470Ω	.2Ω	.2Ω	*5.2KΩ	22KΩ	.5Ω	TOP CAP 0Ω
	V2	6BA6	2.5 Meg.	0Ω	0Ω	.2Ω	*4.7KΩ	*30KΩ	470Ω		
	V3	6BA6	500KΩ	0Ω	0Ω	.2Ω	*5.2KΩ	*30KΩ	0Ω		
‡	V4	6AL5	6.8KΩ	6.8KΩ	0Ω	.2Ω	Inf.	0Ω	Inf.		
	V5	6SQ7	0Ω	4.7 Meg.	0Ω	235KΩ	235KΩ	*470KΩ	0Ω	.2Ω	
	V6	6SJ7	0Ω	0Ω	0Ω	4.7 Meg.	0Ω	*1.5 Meg	.2Ω	*330KΩ	
	V7	6K6GT	Inf.	.2Ω	*400Ω	*125Ω	270KΩ	*44KΩ	0Ω	270Ω	
	V8	6K6GT	0Ω	.2Ω	*450Ω	*125Ω	550KΩ	Inf.	0Ω	270Ω	
	V9	5U4G	Inf.	320KΩ	Inf.	80Ω	Inf.	75Ω	Inf.	320KΩ	

*Measured from pin 2 of V9
‡Taken in FM position.

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer parallel with base of dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to AM antenna stator on tuning gang. Low side to chassis.	455KC	BC (center)	Tuning gang fully open	Across voice coil	A1,A2, A3,A4	Adjust for max. output.
2.	.1MFD	"	1620KC	"	"	"	A5	"
3.		Loop	1400KC	"	Tune for max. signal	"	A6	Install chassis in cabinet properly dress the loop leads. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust of maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.001MFD	High side to pin 1 (Grid) of 6BA6 (V3). Low side to chassis.	10.7MC (No. Mod.)	FM (Full CW Position)	Tuning gang fully open	DC Probe to Point (A) Common to chassis.	A7	Adjust for max. deflection. Attenuate sig. gen. to give 1.5 Volt reading.
5.	.001MFD	High side to pin 1 (Grid) of 6BA6 (V2). Low side to chassis.	"	"	"	"	A8,A9	"
6.	Direct	Across FM Ant. leads.	"	"	"	"	A10, A11	Adjust for max. deflection. Attenuate sig. gen. to give 1.5 Volt reading. Readjust A7,A8,A9,A10 & A11.

7. (a). Reduce signal generator output to give VTVM reading of 1.5 Volts.
(b). Tune signal generator above 10.7MC until VTVM reading is 1 volt-Note generator frequency.
(c). Tune signal generator below 10.7MC until VTVM reading is 1 volt-Note generator frequency.
(d). Add the signal generator frequencies obtained in (b) and (c) and divide the sum by 2. The result is the center frequency to be used in step 8 when aligning the discriminator transformer secondary.
(e). Tune the signal generator above and below 10.7MC and note the voltage reading on the VTVM at different frequency points and plot shape of selectivity curve as in Figures 5 and 6. Curves similar to Figures 1, 2, and 3 are satisfactory. If two peaks are obtained as in Fig 4 with one peak more than 20% higher than the other, repeat steps 4, 5, 6, and 7.

8.	Direct	Across FM ant. leads.	Freq. obtained in step 7 (d)	FM	Tuning gang fully open	DC Probe to Point (B) Common to chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	5000MMF	High side to pin 2 (Grid) of 12AT7 (V1). Low side to chassis.	10.7MC (450KC Sweep)	FM	Point of non interference	Vert.Amp. to Point (A) Low Side to chassis.	A7,A8, A9,A10 A11	Disconnect stabilizer cap C2. Adjust for max. amplitude and symmetry as per Fig 7. Reconnect C2 after making adjustments.
5.	5000MMF	"	"	"	"	Vert.Amp. to Point (B) Low side to chassis.	A12	Adjust so crossover point occurs at center of pattern per Fig 8. Slightly retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	Two 120Ω carbon res.	Across FM ant. leads with 120Ω resistor in each generator lead.	109MC (No.Mod.)	FM	Tuning gang fully open	DC Probe to Point (A) Common to chassis.	A13, A14	Attenuate signal generator to give approx. 1.5 volt reading. Adjust A13 and A14 for maximum deflection.
10.	"	"	87MC (No Mod.)	"	Tune for max. signal	"		If signals in steps 9 and 10 do not fall within ± 500KC of the tuning gang extremes, it will be necessary to compress or expand FM oscillator coil turns and a repeat steps 9 and 10 until correct results are obtained.
11.	"	"	106MC (No Mod.)	"	"	"	A14	Rock tuning gang and readjust A14 for max. deflection. If trimmer will not peak, expand or compress FM ant. coil. Check calibration and tracking at 90MC. Calibration error should not exceed 500KC. Repeat steps 9,10, and 11 until calibration is correct.

FIG.1

FIG.2

FIG.3

FIG. 4

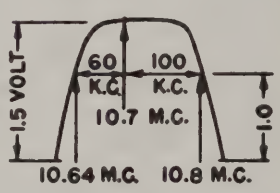


FIG.5

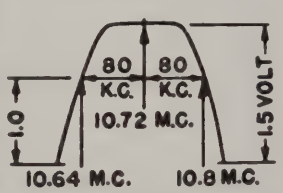


FIG. 6

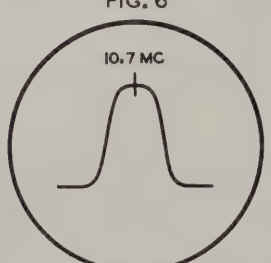


FIG. 7

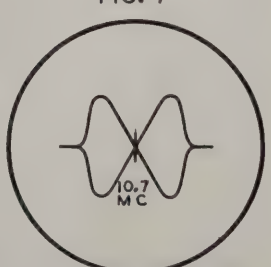
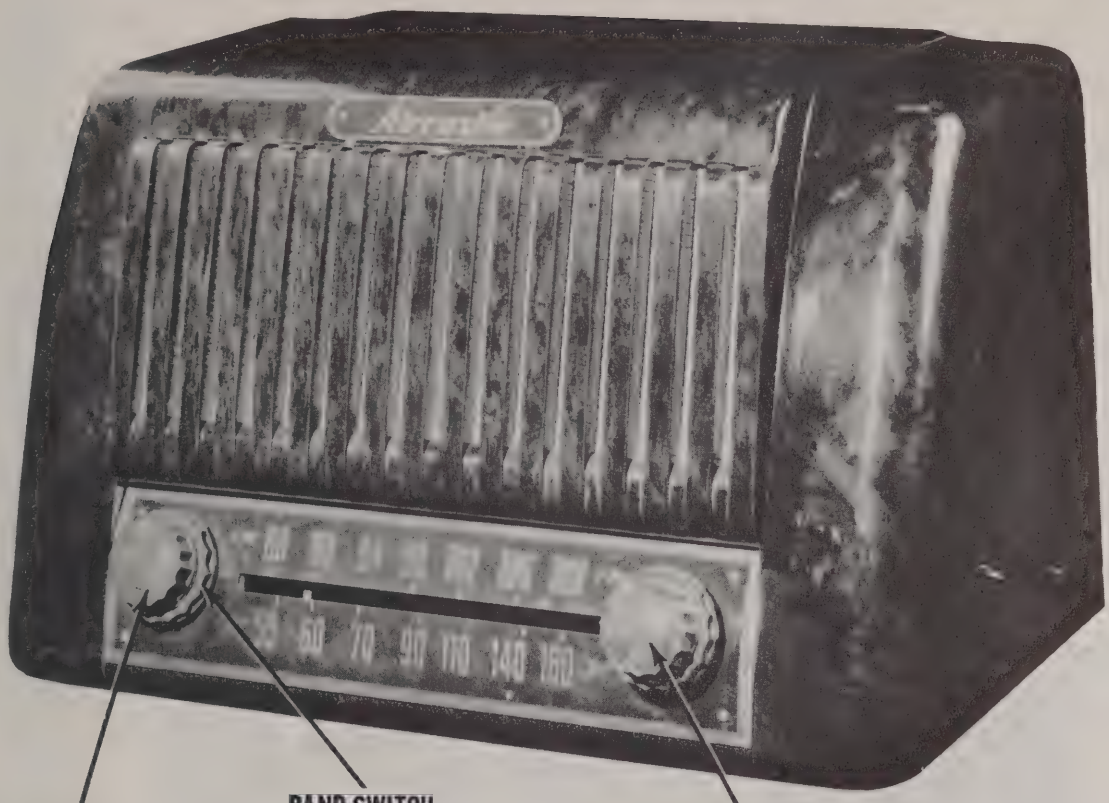


FIG. 8

AIRCASTLE MODEL 212

AIRCASTLE MODEL 212



AIRCASTLE MODEL 212

AIRCASTLE MODEL 212

TRADE NAME	Aircastle, Model 212
SUPPLIER	Spiegel, Inc., 1061 W. 35th St., Chicago, Illinois.
TYPE SET	AC Operated AM-FM Superheterodyne Receiver with Loop Antenna.
TUBES (EIGHT)	Types 6BJ6 FM RF Amp., 12AT7 FM Converter, 12BE6 AM Converter, 6BJ6 1st IF Amp., 12BA6 2nd IF Amp., 19T8 DET-AVC-AF, 35C5 Power Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC — RATING: .38 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	535-1600KC — FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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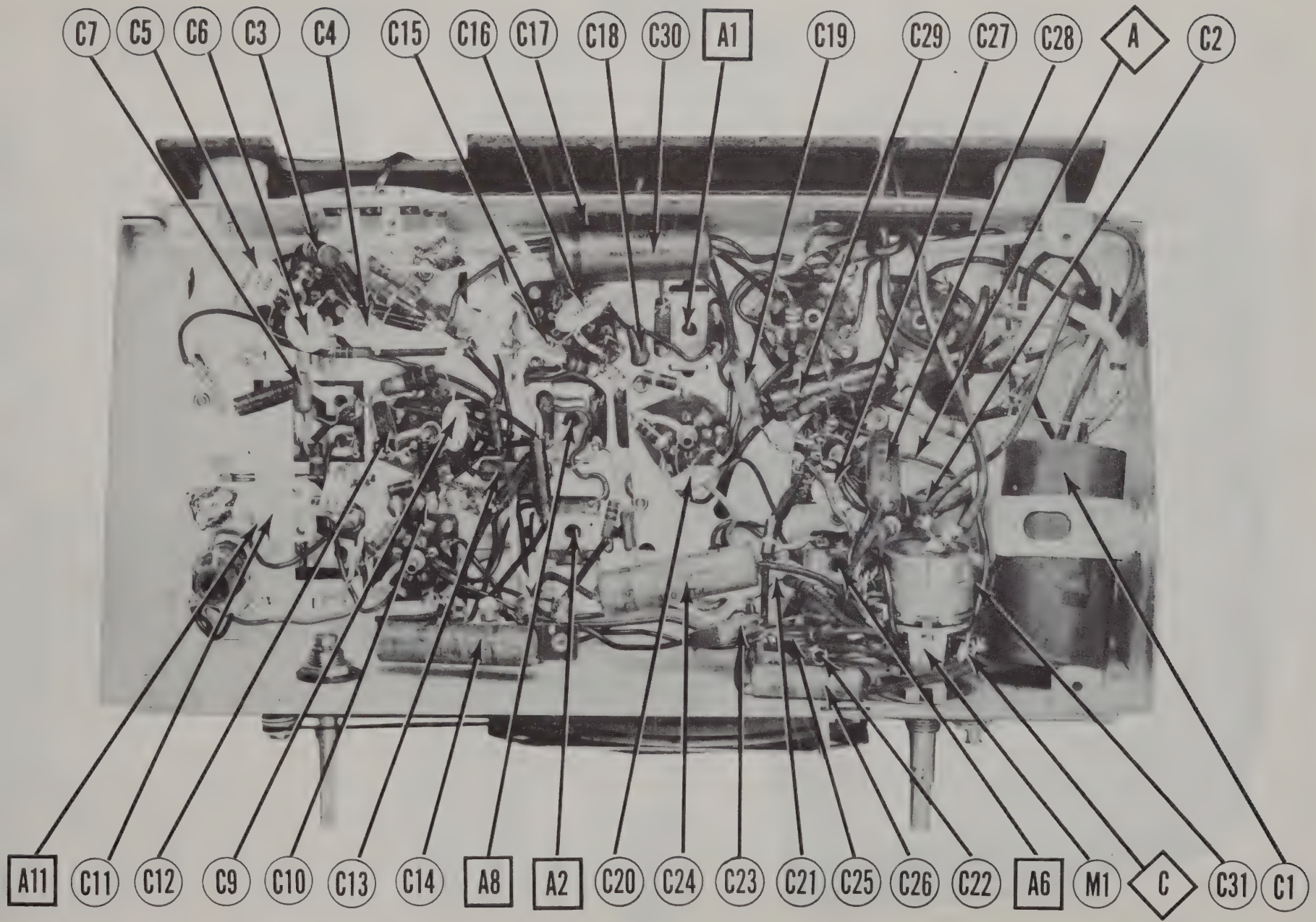
DATE 8/49 4916-3 SET #68 FOLDER #3


C7
C5
C6
C3
C4
C15
C16
C17
C18
C30
A1
C19
C29
C27
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C2
A11
C11
C12
C9
C10
C13
C14
A8
A2
C20
C24
C23
C21
C25
C26
C22
A6
M1
C
C31
C1

R28
R27
R20
R23
R24
R26
R25
R13
R12
R11
R6
L13
R3
R2
L3
R5
R4
L4
R14
R1
R19
R22
R17
R15
R21
R18
R15
R7
L12
L11
R29
R9
L14
R8
R10
L6
C8
L2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	FM RF Amp.	6BJ6	6BJ6	7CM	
V2	FM Converter	12AT7	12AT7	9A	
V3	AM Converter	12BE6	12BE6	7CH	
V4	1st IF Amp.	6BJ6	6BJ6	7CM	
V5	2nd IF Amp.	12BA6	12BA6	7BK	
V6	DET-AVC-AF	19T8	19T8	9E	
V7	Power Output	35C5	35C5	7CV	
V8	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	AIRCASTLE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	150	CE-18	PRSA40302	EZ 42215C		DSB-4030-20-150	TA-303	Filter Blue
B	40	150		PRS150/20			M-10-25	TA-10	Filter Green
C	20	150							Filter Red
D	10	25							Output Cath. Bypass Yel.
C2	4	50	CE-19	PRS150/4	BR550		M-4-150	TA-55	Stabilizing Cap
C3	47		CC-047-8	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	RF Coupling
C4	5000		CC-1-1	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	AVC Filter
C5A	2000		CC-2-1	1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	FM RF Cath. Bypass
B	2000			1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	FM RF Decoupling
C6A	2000		CC-2-1	1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	FM RF Fil. Bypass
B	2000			1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	FM RF Fil. Bypass
C7	100		CC-101-7	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	RF Coupling
C8	1		CSP-1	1468-000001					Osc. Coupling
C9A	2000		CC-2-1	1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	FM Conv. Cath. Bypass
B	2000			1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	FM Osc. Plate Bypass
C10	47		CC-047-8	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	FM Osc. Grid Cap
C11	5-20		TA-2			TS2A-N300-5-20			Variable Trimmer
C12	33	500	CMS-033-9			NP0K-33			Fixed Trimmer
C13	1000	500	CM-102	1468-001	1W5D1	GP2L-001	MW.5-21	1FM-21	FM Conv. Plate Dec.
C14	.05	400	CP-503-1	P488-05	GT4S5		ST-4-05	TM-15	Filament Bypass
C15	5000		CC-1-1	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	AVC Filter
C16A	4000		CC-2-2	1467-004	1D5D4	GP2M-005	MW.5-24	1FM-24	1st IF Decoupling
B	4000			1467-004	1D5D4	GP2M-005	MW.5-24	1FM-24	1st IF Fil. Bypass
C17	.05	400	CP-503-1	P488-05	GT4S5		ST-4-05	TM-15	1st IF Decoupling
C18	100		CC-101-7	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	IF Coupling Note
C19	150	500	CM-151-1	1468-00015	5W5T15	GP2K-150	MO.5-315	1FM-315	IF Coupling
C20A	2000		CC-2-1	1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	2nd IF Cath. Bypass
B	2000			1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	2nd IF Fil. Bypass
C21	5000		CC-1-1	1468-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd IF Decoupling
C22	68		CC-068-7	1468-000075	5W5Q7	GP1K-75	MO.5-31	1FM-475	Diode Filter
C23	150	500	CM-151-1	1468-00015	5W5T15	GP2K-150	MO.5-315	1FM-315	Diode Filter
C24	.05	400	CP-503-1	P488-05	GT4S5		ST-4-05	TM-15	AVC Filter
C25	150	500	CM-151-1	1468-00015	5W5T15	GP2K-150	MO.5-315	1FM-315	Diode Load Cap
C26	.002	400	CP-202-2	P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	De-emphasis
C27A	2000		CC-2-1	1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	RF Bypass
B	2000			1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	DET-AF Fil. Bypass
C28	.002	400	CP-202-2	P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	Audio Coupling
C29	.01	400	CP-103-1	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C30	.02	800	CP-203-20	P1088-02	GT16S2		STM-10-02	MB-12	Output Plate Bypass
C31	.05	400	CP-503-1	P488-05	GT4S5		ST-4-05	TM-15	Line Filter

Note. Some Models Use 68MMF In This Application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	1 Meg.	½	VE-17			Volume control and SW - Band Switch

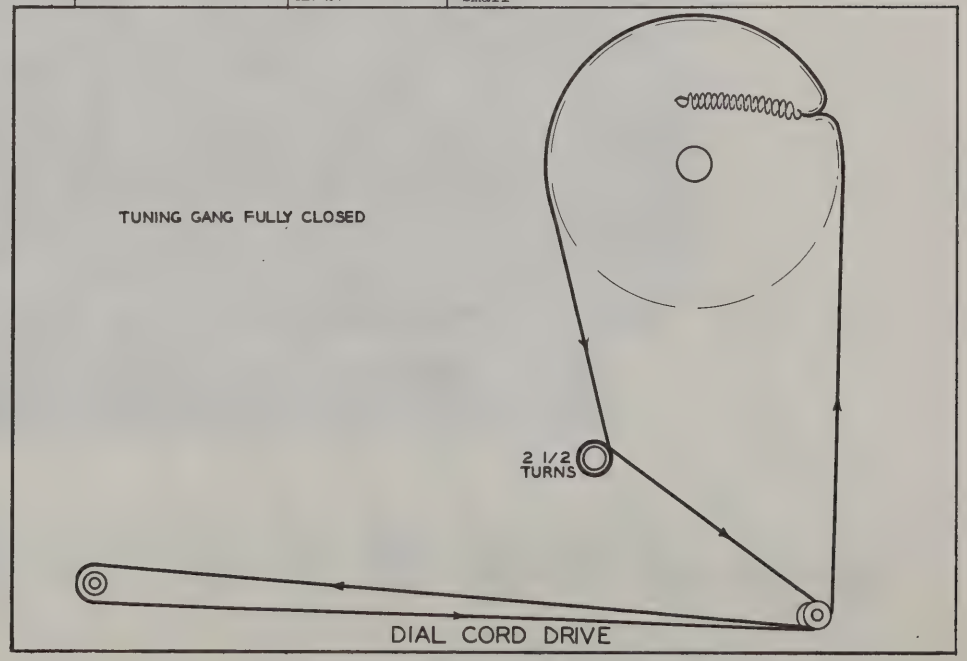
PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: MEISSNER PART No.	
L1	Loop Ant.	.2Ω	3.5Ω	LP-13		
L2	AM Osc.Coil	.8Ω	6Ω	LC-9	14-1060‡	‡Add 50MMF from high side of tuning cap. to Osc. Grid.
L3	RF Grid Choke		.5Ω	LC-15		
L4	RF Plate Choke		1.5Ω	LC-14		
L5	FM RF Coil		0Ω	LC-12		
L6	FM Osc.Coil		0Ω	LC-11		
L7	FM 1st IF	.8Ω	.6Ω	LF-30		
L8	AM 1st IF	15Ω	15Ω	LF-32	16-6678	
L9A	FM 2nd IF		1Ω	LF-31		
B	AM 2nd IF		8.5Ω			
L10	Ratio Det.	1.5Ω	.8Ω	LF-33		
L11	Fil. Choke		.5Ω	LC-13		
L12	Fil. Choke		.5Ω	LC-13		
L13	Fil. Choke		.5Ω	LC-13		
L14	Conv. Cath. Choke		2Ω	LC-16		

MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
M1	Switch	VC-17	Band (Includes Volume Control)
M2	2 Gang Var. Cap.	CV-17	(21-387MMF, 24-165MMF)
A11	Trimmer	TA-2	FM Osc. Adj.
	Dial Pointer	PN-17	
	Knob Assembly	KN-28	
	Knob	KN-26	Large
	Knob	KN-27	Small



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	
R2	1000Ω	½	RC-102-1	BTS-1000	Ant. Shunt
R3	100KΩ	½	RC-104-1	BTS-100K	FM RF Grid
R4	68Ω	½	RC-680-2		FM RF Cathode
R5	1000Ω	½	RC-102-1	BTS-1000	FM RF Decoupling
R6	2200Ω	½	RC-222-2	BTS-2200	FM Conv. Cathode
R7	1000Ω	½	RC-102-1	BTS-1000	FM Conv. Plate Decoupling
R8	100KΩ	½	RC-103-2	BTS-10K	FM Osc. Grid
R9	1000Ω	½	RC-102-1	BTS-1000	FM Osc. Plate
R10	22KΩ	½	RC-223-1	BTS-22K	AM Osc. Grid
R11	68Ω	½	RC-680-2		1st IF Cathode
R12	100KΩ	½	RC-104-1	BTS-100K	2nd IF Grid
R13	68Ω	½	RC-680-2		2nd IF Cathode
R14	1000Ω	½	RC-102-1	BTS-1000	2nd IF Decoupling
R15	100KΩ	½	RC-104-1	BTS-100K	Diode Filter
R16	100KΩ	½	RC-104-1	BTS-100K	Diode Filter
R17	2.2 Meg.	½	RC-225-1	BTS-2.2 Meg.	AVC Network
R18	1000Ω	½	RC-102-1	BTS-1000	AVC Network
R19	220KΩ	½	RC-224-1	BTS-220K	AVC Network
R20	15KΩ	½	RC-163-3	BTS-15K	Ratio Det. Diode Load
R21	180Ω	½	RC-181-2		Balancing
R22	39KΩ	½	RC-393-2	BTS-39K	De-emphasis
R23	10 Meg.	½	RC-106-1	BTS-10 Meg.	AF Grid
R24	220KΩ	½	RC-224-1	BTS-220K	AF Plate
R25	470KΩ	½	RC-474-1	BTS-470K	Output Grid
R26	180Ω	½	RC-181-2	BW-½-180	Output Cathode
R27	270Ω	2	RW-271-8	BW-2-270	Filter
R28	470Ω	2	RW-475-8	BW-2-470	Filter
R29	220KΩ	½	RC-224-1	BTS-220K	Line Isolation

TRANSFORMER (POWER)

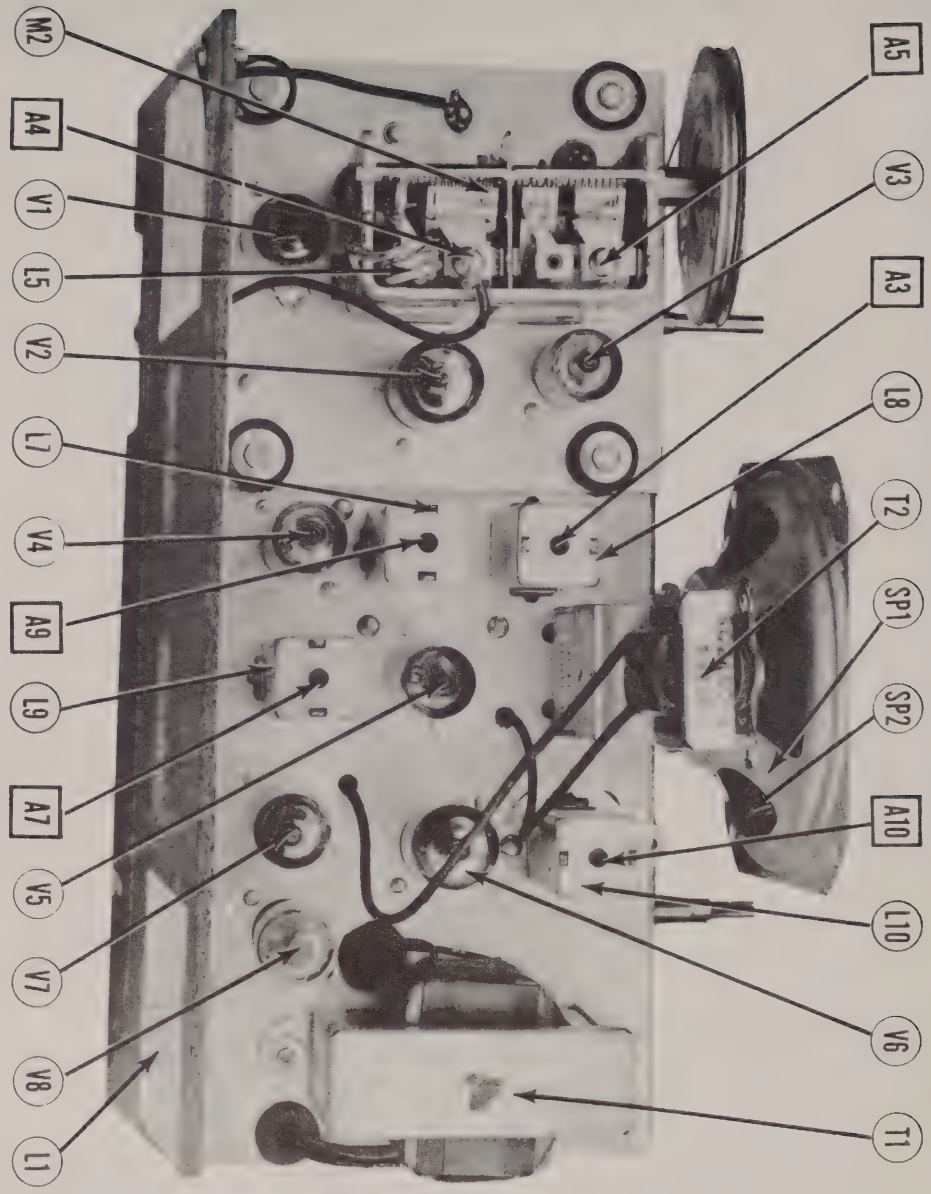
ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIRCASTLE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	130VAC Tapped @ 117 VAC @ .38A	130VAC @ .071A DC						

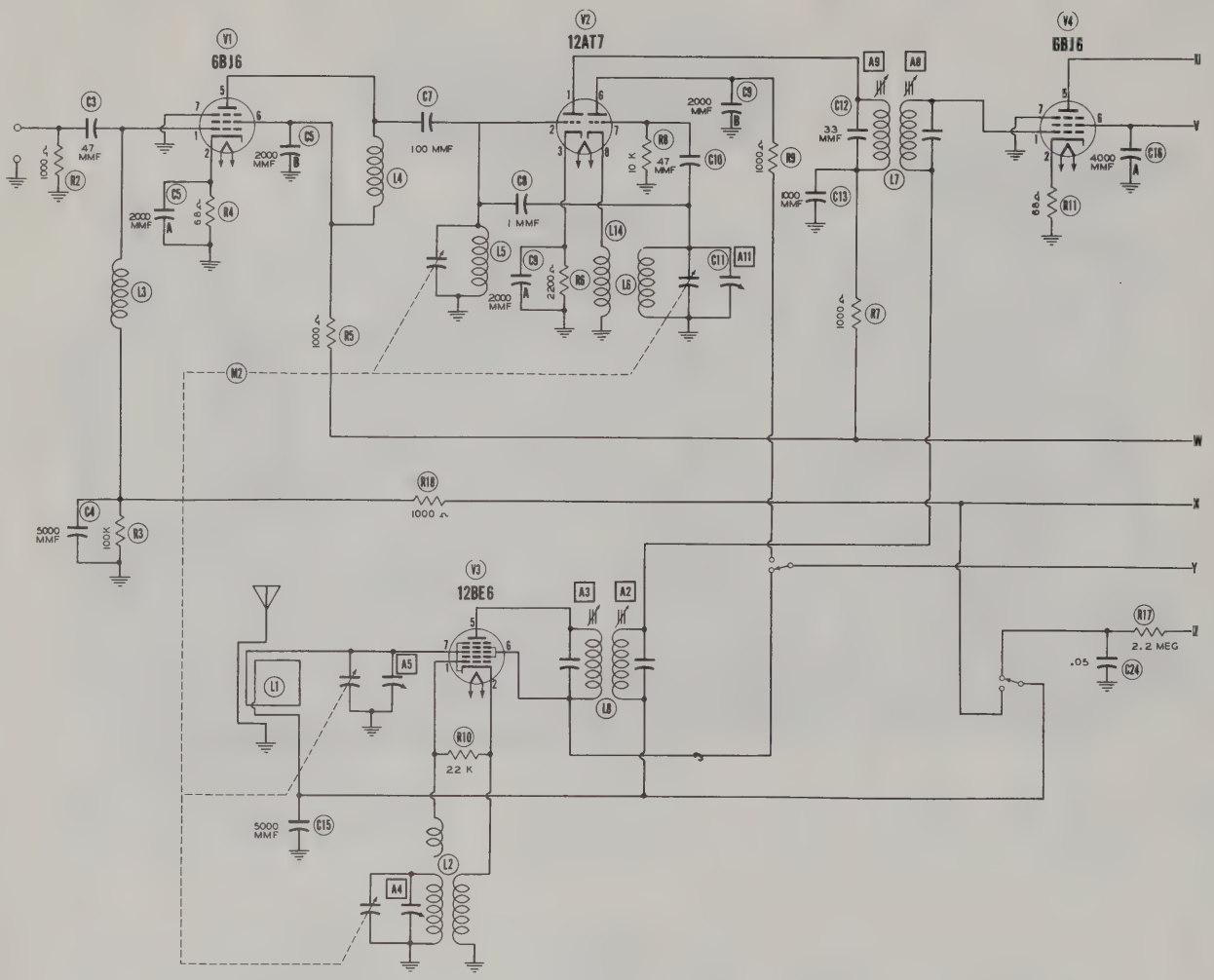
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	6400Ω	3.2Ω	285Ω	.7Ω	TR-10B	A-3332†	RO-2§	A-3025†	†Bend Mounting Tabs Down And Mount On Original Bracket. §Fabricate Mounting Bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V.C. IMP.	AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.2Ω	SP-41-10B	ST-113‡ MOD.P4-X	4A07‡	‡Remount Output Transformer
	CONE DIA.	V.C. DIA.				
SP2	3-7/8"	9/16"				





IF=455 KC AM

IF=10.7 MC FM

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
V1	6BJ6	65KΩ	68Ω	220KΩ	220KΩ	1.8KΩ *	1.8KΩ *	0Ω		
V2	12AT7	1.8KΩ *	0Ω	2KΩ	220KΩ	220KΩ	1.8KΩ *	10KΩ	2Ω	220KΩ
V3	12BE6	21KΩ	.6Ω	220KΩ	220KΩ	750Ω *	750Ω *	3 Meg.		
V4	6BJ6	3 Meg.	68Ω	220KΩ	220KΩ	750Ω *	750Ω *	0Ω		
V5	12BA6	120KΩ	0Ω	220KΩ	220KΩ	1.6KΩ *	1.6KΩ *	68Ω		
V6A	19T8 ‡	1 Meg.	16KΩ	1 Meg.	220KΩ	220KΩ	0Ω	0Ω	10 Meg.	220KΩ *
V6B	19T8	INF	16KΩ	INF	220KΩ	220KΩ	1.2 Meg.	0Ω	10 Meg.	220KΩ *
V7	35C5	170Ω	INF	220KΩ	220KΩ	420KΩ	750Ω *	560Ω *		
V8	35W5	INF	INF	220KΩ	220KΩ	40Ω	220KΩ	110KΩ		

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

* Measured from pin 7 of 35W4

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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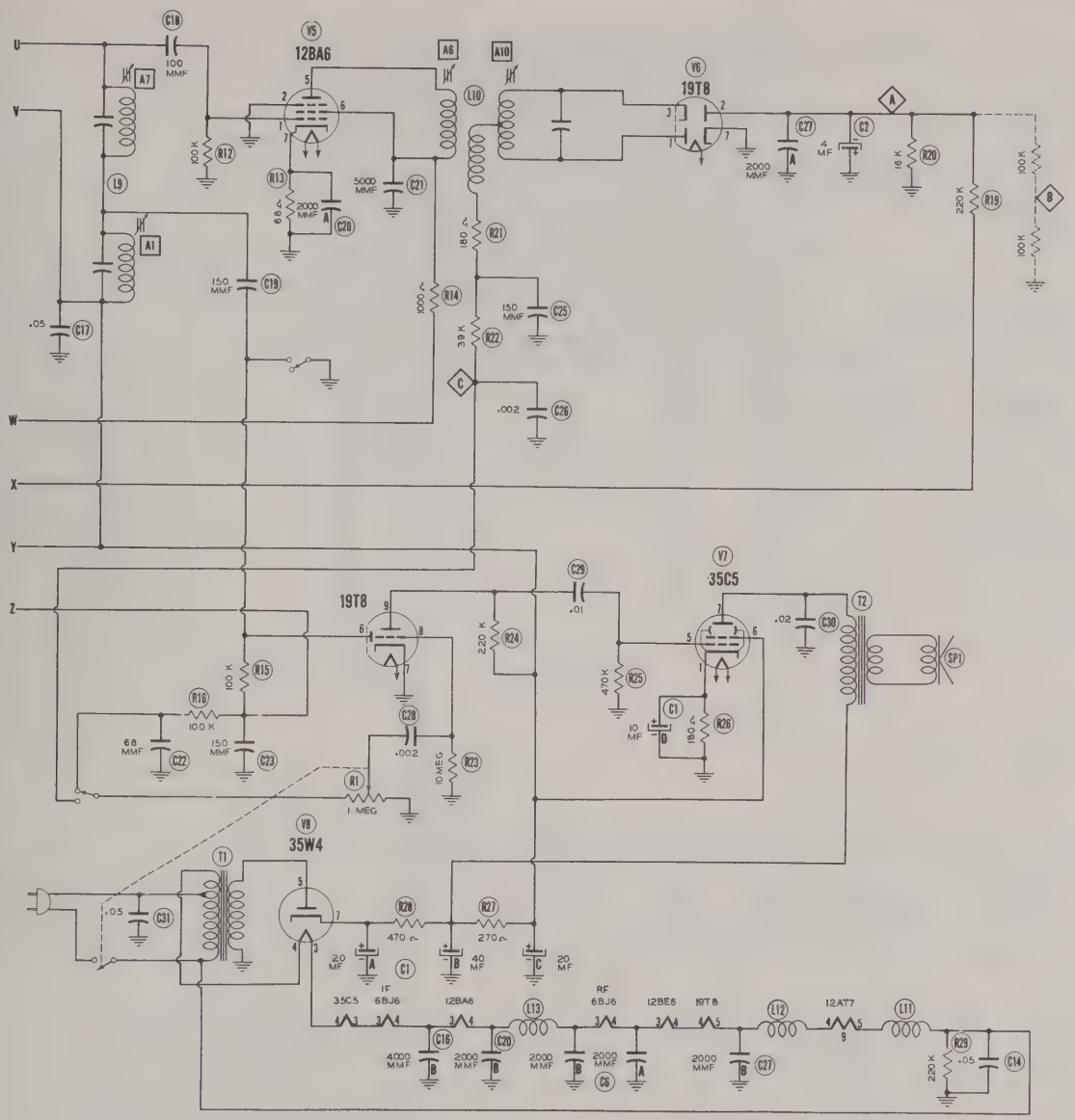

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
V1	6BJ6 ‡	-.3VDC	.5VDC	7.5VAC	11VAC	90VDC	90VDC	0V		
V2	12AT7 ‡	97VDC	0V	2.3VDC	40VAC	55VAC	95VDC	§-2.2VDC	0V	50VAC
V3	12BE6	§-7.8VDC	0V	11VAC	22VAC	113VDC	113VDC	-.1VDC		
V4	6BJ6	-.1VDC	.8VDC	11VAC	7VAC	113VDC	113VDC	0V		
V5	12BA6 ‡	0V	0V	7VAC	7.5VAC	87VDC	87VDC	.7VDC		
V6A	19T8 ‡	-.7VDC	1.4VDC	-.7VDC	22VAC	40VAC	0V	0V	-.7VDC	57VDC
V6B	19T8	-.7VDC	1.4VDC	-.7VDC	22VAC	40VAC	-1VDC	0V	-.8VDC	60VDC
V7	35C5	6.8VDC	0V	11VAC	40VAC	0V	115VDC	116VDC		
V8	35W4	0V	0V	40VAC	66VAC	145VAC	70VAC	145VDC		

‡TAKEN WITH VACUUM TUBE VOLTMETER.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

For correct pointer setting, turn tuning cap. fully open. Set center of pointer 1 inch from center of tuning control shaft.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	5000MMF	High side to pin 7 12BE6(V3). Low side to chassis.	455KC	AM (Counter-clockwise).	Tuning cap. fully open.	Across voice coil.	A1,A2, A3	Adjust for maximum output.
2	5000MMF	"	1620KC	"	"	"	A4	Adjust for maximum output.
3	5000MMF	High side to ext. ant. Low side to chassis.	1400KC	"	Tune for max. output.	"	A5	Adjust for maximum output.

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect 2 100KΩ resistors (± 5%) between point A and chassis as shown on schematic. Junction of these two resistors is point B.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4	5000MMF	High side to pin 1 12BA6(V5). Low side to chassis.	10.7MC	FM (Fully clockwise).	Point of non-interference.	D.C.Probe to point A. Common to chassis.	A6	Adjust for maximum deflection.
5	5000MMF	High side to pin 1 6BJ6(V4). Low side to chassis.	10.7MC	"	"	"	A7	" " "
6	5000MMF	High side to pin 2 12AT7(V2). Low side to chassis.	10.7MC	"	"	"	A8,A9	" " "
7	5000MMF	"	10.7MC	"	"	D.C.Probe to point B. Common to point C.	A10	Adjust for zero reading. A positive or negative reading will be on either side of the correct setting.
8	300Ω carbon resistor	High side to left hand ant. terminal. Low side to right hand ter.	108MC	"	108MC	"	A11	Adjust for maximum deflection.
9	300Ω carbon resistor	"	108MC	"	108MC	"	FM RF coil(73)	Slightly expand or compress coil for maximum deflection.

ALTERNATE FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4	5000MMF	High side to pin 1 12BA6(V5). Low side to chassis.	10.7MC (450 KC sweep).	FM	Set at point of non interference.	Vertical amp. to point A. Low side to chassis.	A6	Disconnect stabilizer capacitor(C2). Adjust for maximum amplitude and symmetry as per Fig.1.
5	5000MMF	High side to pin 1 6BJ6(V4). Low side to chassis.	10.7MC (450 KC sweep).	"	"	"	A7	Adjust for maximum amplitude and symmetry as per Fig.1.
6	5000MMF	High side to pin 2 12AT7(V2). Low side to chassis.	10.7MC (450 KC sweep).	"	"	"	A8,A9	Adjust for maximum amplitude and symmetry as per Fig.1. Reconnect stabilizer capacitor.
7	5000MMF	"	10.7MC (450 KC sweep).	"	"	Vertical amp. to point C. Low side to chassis.	A10	Adjust for maximum straightness of crossover line with crossover occurring at center of pattern as per Fig.2. Slightly retouch A6,A7, A8, & A9 for equal amplitude of peaks.

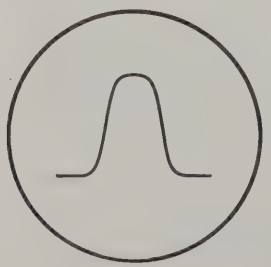


FIG. 1

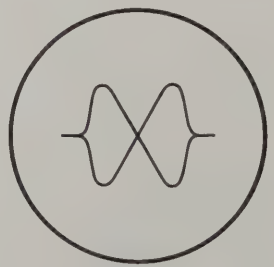
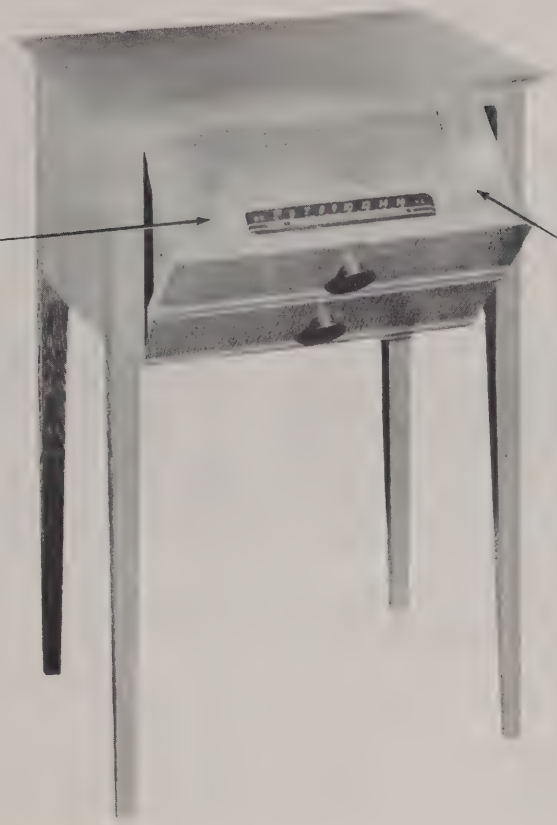


FIG. 2



AIRLINE
MODEL 84KR2511A

AIRLINE
MODEL 84KR2511A

AIRLINE MODEL 84KR2511A

TRADE NAME	Airline, Model 84KR2511A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna.
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 DET-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn tuning gang fully closed and set pointer 3/4" to the right of the extreme left hand end of dial back plate at low frequency end of dial.

Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to Pin 8 (Grid) of 12SA7 (V1). Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation.
2.	200MMF	High side to external antenna terminal. Low side to B-.	1620KC (400~ Mod.)	"	"	A5	Adjust for maximum output.
3.	200MMF	"	1400KC (400~ Mod.)	Tune for max. output.	"	A6	Adjust for maximum output.

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DATE 8/49 4916-4 SET #68 FOLDER #4

PARTS LIST AND DESCRIPTIONS

AIRLINE
MODEL 84KR2511A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amp.	12SK7	12SK7	8N	
V3	DET-AVC-AF	12SQ7	12SQ7	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	26079	PRSA150/40-30	EZ 44315C*		DSB-4030 20-150	TA-303	Filter Red
B	30	150		PRS150/30					Filter Green
C	30	150							Filter Yellow
C2	.05	200	26467	P288-05	GT2S5		ST-4-05	TM-15	AVC Filter
C3	100	500	8872	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Osc. Grid Cap
C4	.1	200	26157	P288-1	GT2P1		ST-2-1	TM-1	RF Bypass
C5	.005	600	17646	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C6	.0005	600	8874	1468-0005	GT6T5	GP2K-500	ST-6-005	TC-35	Tone Compensation
C7	.01	400	8877	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C8	200	500	14370	1468-0002	5W5T2	GP2K-200	MO.5-32	1FM-32	AF Plate Bypass
C9	.01	600	8876	P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	Audio Coupling
C10	.01	600	8876	P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	Output Plate Bypass
C11	.05	400	17531	P488-05	GT4S5		ST-4-05	TM-15	Line Filter
C12	.1	200	26157	P288-1	GT2P1		ST-2-1	TM-1	Line Isolation

*Omit Bypass Section.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	2 Meg.	½	26485	Q13-139X	AT-115	Volume control, tapped @ 500KΩ
B	Shaft			Not Req.	KSS-3	Attach to R1A per instructions.

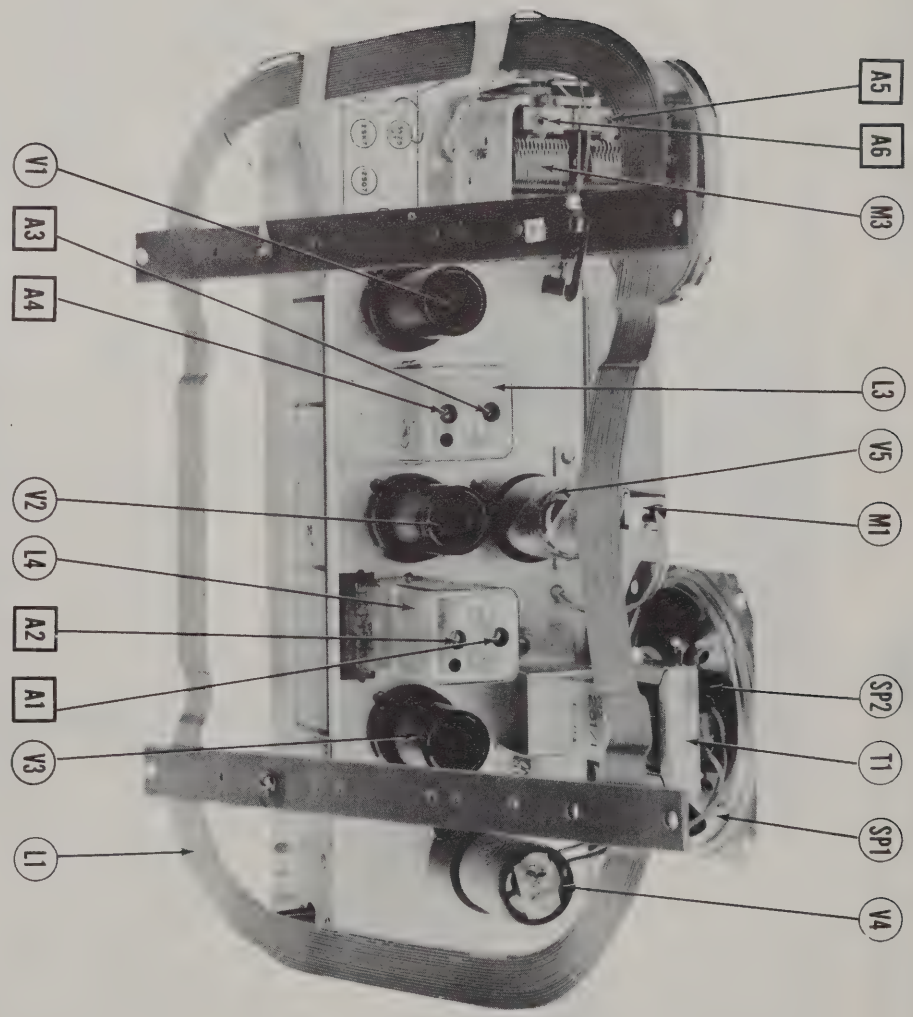
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	25038	BTS-22K	Osc. Grid
R3	100Ω	½	26445	BW-½-100	IF Cathode
R4	2.2 Meg.	½	25134	BTS-2.2 Meg	AVC Network
R5	470KΩ	½	25042	BTS-470K	Diode Load
R6	68KΩ	½	25040	BTS-68K	Tone Compensation
R7	15 Meg.	½	14365	BTS-15 Meg.	AF Grid
R8	470KΩ	½	25042	BTS-470K	AF Plate
R9	470KΩ	½	25042	BTS-470K	Output Grid
R10	150Ω	½	25202	BW-½-150	Output Cathode
R11	1500Ω	1	25230	BW-1-1500	Filter
R12	220Ω	1	26084	BW-1-220	Filter
R13	22Ω	½	26466		Rect. Ballast
R14	39Ω	1	26085	BW-1-39	Filament Dropping Wire Wound
R15	220KΩ	½	25041	BTS-220K	Isolation

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
T1	1800Ω	3.5Ω	130Ω	.5Ω	26092	A-3876#	RO-2#	A-2928#	#Bend mounting tabs down and mount on original bracket

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V.C. IMP.		ST-113†‡		†Remount output transformer
SP1	PM	3.5Ω	26171-B	MOD.P4-X	4A07†	‡Drill and tap magnet frame
	CONE DIA.	V.C. DIA.				
SP2	3-7/8"	9/16"				

R F COILS

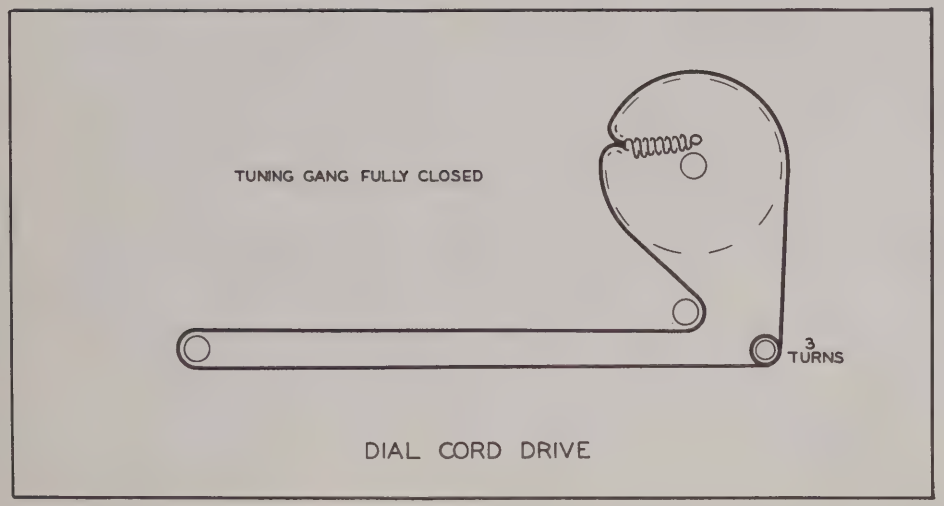
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA MEISSNER PART No.
L1	Loop Ant.	1.5Ω		26439	
L2	Osc.Coil	6Ω		26078	14-1060
L3	Input IF	30Ω	30Ω	26433	16-6658
L4	Output IF	30Ω		26432	16-6670

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA AIRLINE PART No.		NOTES
M1	Bayonet	6-8V	.15	Brown			Type #47

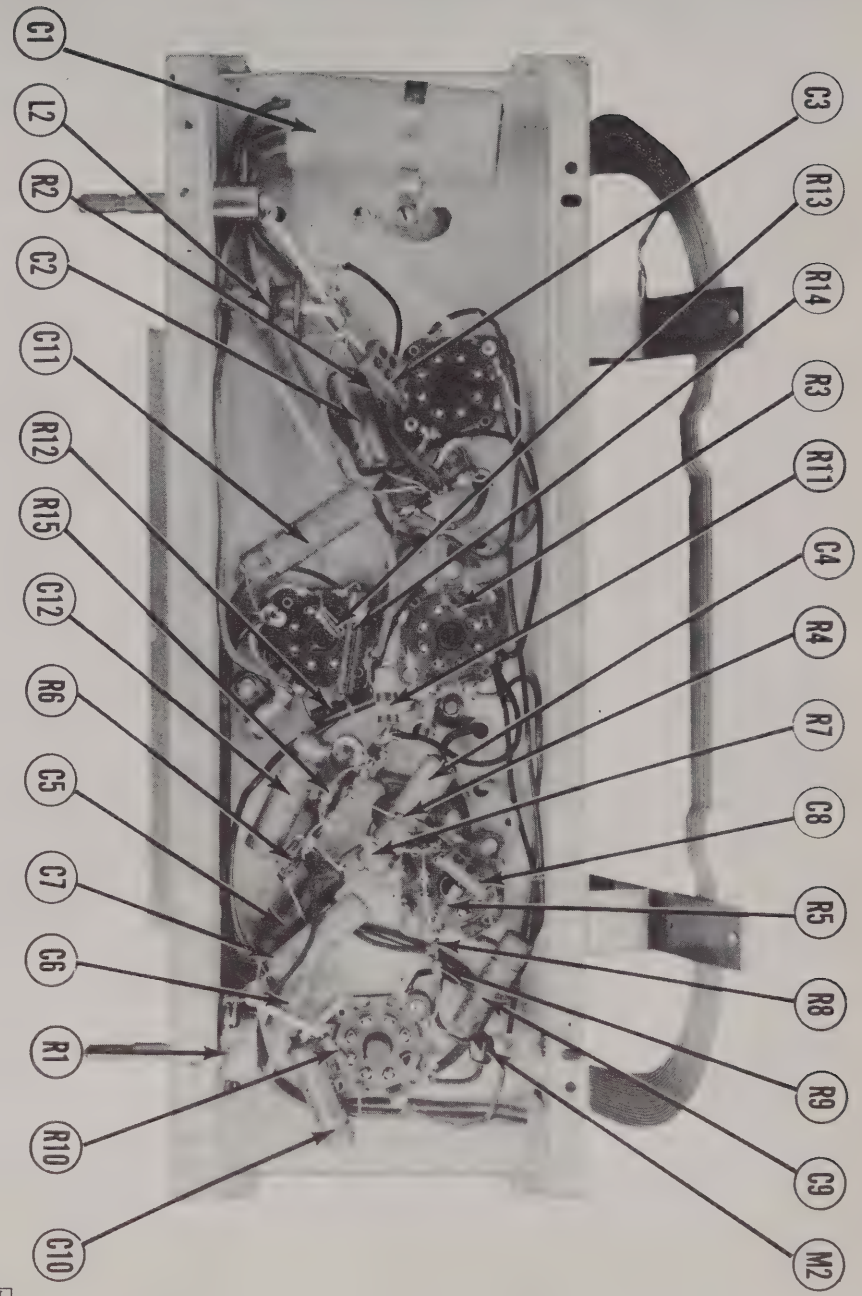
MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M2	Switch	26089	On-Off (Mercury)
M3	2 Gang Var. Cap.	26081	(30-452MMF, 39-212MMF)
	Dial Scale	26480	
	Dial Pointer	25925	
	Knob	26477	

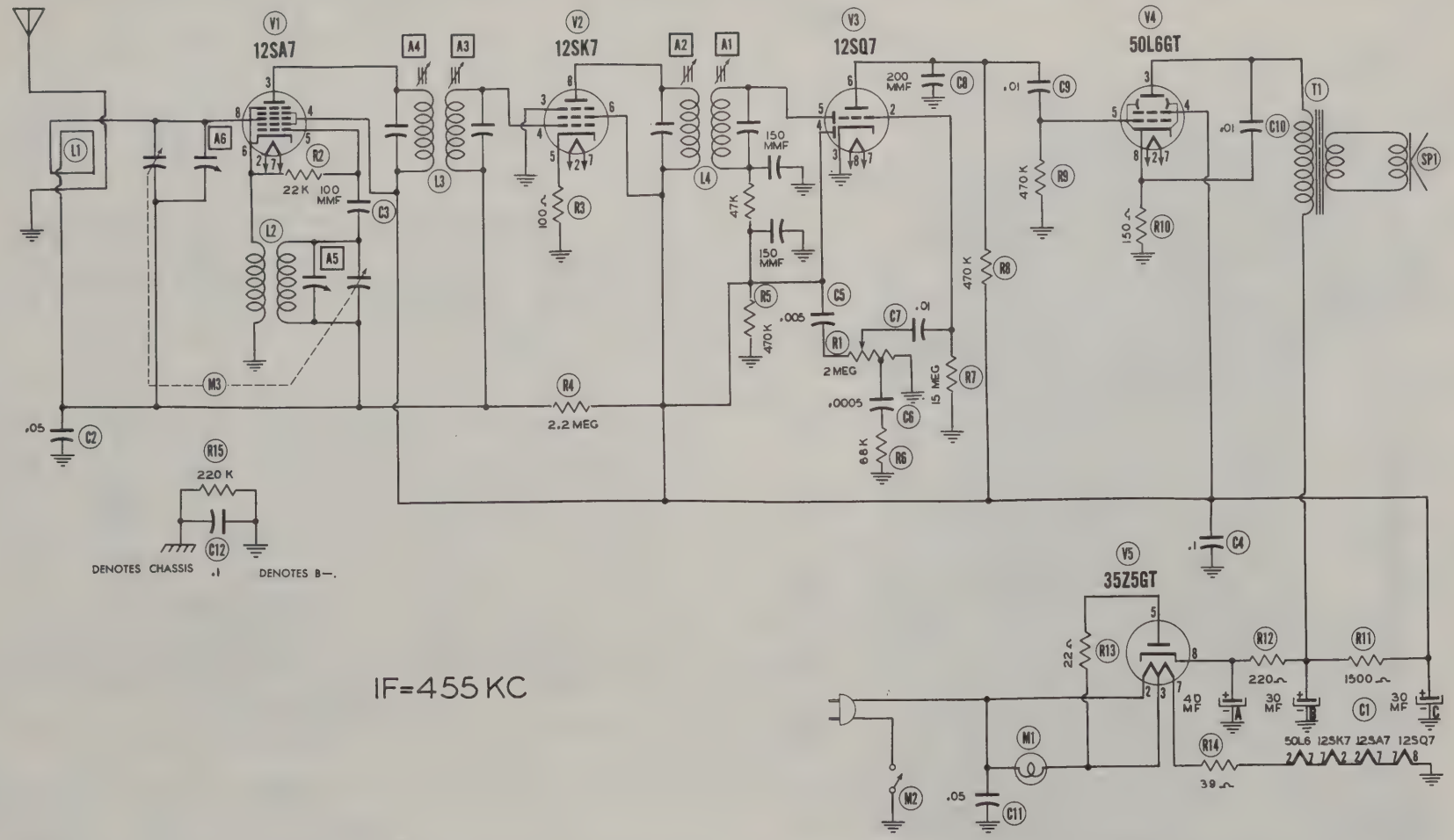


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



AIRLINE MODEL 84KR2511A



IF=455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0V	24VAC	85VDC	85VDC	§-8.5 VDC	0V	12VAC	-1.4VDC
V 2	12SK7	0V	24VAC	0V	-1.3VDC	.7VDC	85VDC	36VAC	85VDC
V 3	12SQ7	0V	-.5VDC	0V	-.3VDC	-.3VDC	50VDC	12VAC	0V
V 4	50L6GT	0V	85VAC	105VDC	85VDC	0V	0V	36VAC	5.2VDC
V 5	35Z5GT	0V	117VAC	114VAC	85VAC	112VAC	110VDC	90VAC	122VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	220KΩ	24Ω	†2KΩ	†2KΩ	22KΩ	1.2Ω	12Ω	3 Meg.
V 2	12SK7	220KΩ	24Ω	0Ω	3 Meg.	100Ω	†2KΩ	36Ω	†2KΩ
V 3	12SQ7	220KΩ	15 Meg.	0Ω	470KΩ	470KΩ	†470KΩ	12Ω	0Ω
V 4	50L6GT	Inf.	86Ω	†380Ω	†2KΩ	470KΩ	Inf.	36Ω	150Ω
V 5	35Z5GT	Inf.	160Ω	150Ω	86Ω	175Ω	110KΩ	126Ω	110KΩ

†Measured From Pin 8 Of V5.

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4916-4

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DAVID BOGEN
MODEL PX10

DAVID BOGEN
MODEL PX10

DAVID BOGEN MODEL PX10

TRADE NAME	David Bogen, Model PX10
MANUFACTURER	David Bogen Co., 663 Broadway, New York 12, New York
TYPE SET	AC Operated 2 Channel Audio Amplifier
TUBES(SEVEN)	Types 6SC7 Phono Pre Amp., 6SL7GT Expander Amp.-Rectifier, 6SA7 1st AF Amp., 6SL7GT 2nd AF-Phase Inv., (2) 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC RATING: .60 Amp. @ 117 Volts AC

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DATE 8/49 4916-5 SET #68 FOLDER #5

PARTS LIST AND DESCRIPTIONS

DAVID BOGEN
MODEL PX10

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Phono Pre-Amp.	6SC7	6SC7	8S	
V2	Expander Amp-Rect.	6SL7GT	6SL7GT	8BD	
V3	1st AF Amp.	6SA7	6SA7	8R	
V4	2nd AF Amp. Phase Inverter	6SL7GT	6SL7GT	8BD	
V5	Power Output	6V6GT	6V6GT	7AC	
V6	Power Output	6V6GT	6V6GT	7AC	
V7	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

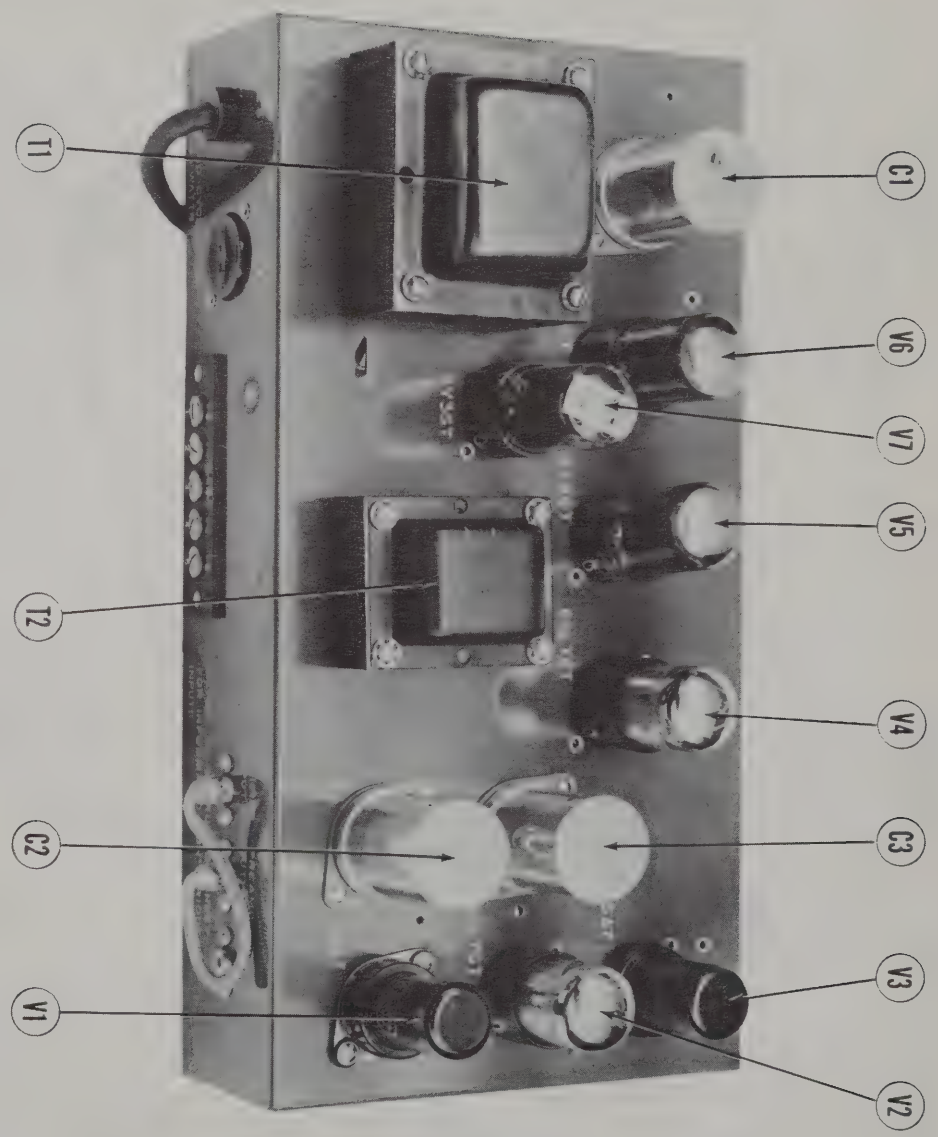
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DAVID BOGEN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	10	450		AF22J	UP1145		DY-2x10	EL-210	▲Filter
B	10	450					-450		▰Filter
C2A	10	450		AF22J	UP1145		DY-2x10	EL-210	▲Pre-Amp Decoupling
B	10	450					-450		▰Pre-Amp Decoupling
C3A	5	450		AF2222J	UP		DY-4x10	EL-410	■Decoupling
B	5	450			111145		-450		▰1st AF Screen Bypass
C	5	450							1st AF Screen Bypass
D	5	450							▲1st AF Plate Dec.
C4	8	450		PRS450/8	BR845		M-8-450	UT-8	Output Screen Bypass
C5	50	50		PRS50/50	BR505		M-50-50	TVA-16	Output Cath. Bypass
C6	25	25		PRS25/25	BR252A		M-25-25	TVA-6	1St AF Cath. Bypass
C7	10	25		PRS25/25	BR102A		M-10-25	TVA-5	Exp. Amp. Cath. Bypass
C8	10	25		PRS25/25	BR102A		M-10-25	TVA-5	2nd AF Cath. Bypass
C9	.05	600		P688-05	GT6S5		ST-6-05	TM-15	Audio Coupling
C10	.05	600		P688-05	GT6S5		ST-6-05	TM-15	Audio Coupling
C11	.01	600		P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	Tone Compensation
C12	.01	600		P688-01	GT6S1	GP2-335-01	ST-6-01		Tone Compensation
C13	.05	600		P688-05	GT6S5		ST-6-05	TM-15	Audio Coupling
C14	350	500		1468-00035				1FM -350	Audio Coupling
C15	.01	600		P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	Audio Coupling
C16	.25	200		P488-25	GP2P25		ST-2-25	TC-2	Exp. Diode Filter
C17	.25	200		P488-25	GP2P25		ST-2-25	TC-2	Exp. Diode Filter
C18	.05	600		P688-05	GT6S5		ST-6-05	TM-15	Audio Coupling
C19	.006	600		P688-006	GT6D6	GP2M-005	ST-6-006	TM-26	Audio Coupling
C20	.002	600		P688-002	GT6I2	GP2M-002	ST-6-002	TM-22	Tone Compensation
C21	.002	600		P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	Tone Compensation
C22	.05	600		P688-05	GT6S5		ST-6-05	TM-15	Tone Compensation
C23	.005	600		P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Tone Compensation
C24	.03	400		P488-03	GT4S3		ST-6-03	TM-13	Tone Compensation
C25	.05	600		P688-05	GT6S5		ST-6-05	TM-15	Tone Compensation
C26	.05	600		P688-05	GT6S5		ST-6-05	TM-15	Audio Coupling
C27	.05	600		P688-05	GT6S5		ST-6-05	TM-15	Audio Coupling
C28	10	500		1468-00001	5W5Q1	GP1K-10	MO.5-41	MS-41	AF Feedback
C29	.1	500		P688-1	GT6P1		ST-6-1	TM-1	Line Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DAVID BOGEN PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½		Q13-133	M-60-Z	Volume control
B	Switch			76-1	SW-A	Attach to R1A per instructions
R2A	500KΩ	½		Q13-133	M-60-Z	Expansion control
B	Switch			43	SW-A1	Attach to R2A per instructions

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	DAVID BOGEN PART No.	IRC PART No.	
R3	47KΩ	½		BTS-47K	Pre-Amp Input Load
R4	1 Meg.	½		BTS-1 Meg.	Pre-Amp Grid
R5	47KΩ	½		BTS-47K	Pre-Amp Plate
R6	220KΩ	½		BTS-220K	Filter
R7	100KΩ	½		BTS-100K	Tone Compensation
R8	15KΩ	½		BTS-15K	Tone Compensation
R9	1 Meg.	½		BTS-1 Meg.	Pre-Amp Grid
R10	68KΩ	½		BTS-68K	Pre-Amp Plate
R11	220KΩ	½		BTS-220K	Filter
R12	33KΩ	½		BTS-33K	Tone Compensation
R13	200KΩ	½		BTS-220K	Tone Compensation
R14	3300Ω	½		BTS-3300	Expander Amp. Cathode
R15	100KΩ	½		BTS-100K	Expander Amp. Plate
R16	220KΩ	½		BTS-220K	Rect. Plate Load
R17	470KΩ	½		BTS-470K	Rect. Cathode
R18	470KΩ	½		BTS-470K	1st AF Amp. Grid
R19	470KΩ	½		BTS-470K	Expander Filter
R20	1800Ω	½		BTS-1800	1st AF Amp. Cathode
R21	22KΩ	½		BTS-22K	1st AF Amp. Plate
R22	47KΩ	½		BTS-47K	Filter
R23	33KΩ	½		BTS-33K	Voltage Divider
R24	470KΩ	½		BTS-470K	2nd AF Amp. Grid
R25	330Ω	½		BW-½-330	2nd AF Amp. Cathode (Wire Wound)
R26	1000Ω	1		BTA-1000	2nd AF Amp. Cathode
R27A	6800Ω	½		BTS-6800	2nd AF Amp. Cathode
B	6800Ω	½		BTS-6800	2nd AF Amp. Cathode
R28	220KΩ	½		BTS-220K	2nd AF Amp. Plate
R29	3900Ω	½		BTS-3900	Phase Inv. Cathode
R30	22KΩ	½		BTS-22K	Phase Inv. Grid
R31	220KΩ	½		BTS-220K	Phase Inv. Plate
R32A	6800Ω	2		BTS-6800	Tone Compensation
B	6800Ω	2		BTS-6800	Tone Compensation
R33	470Ω	½		BTS-470	Tone Compensation
R34	100KΩ	½		BTS-100K	Feedback
R35	22KΩ	½		BTS-22K	Filter
R36	10KΩ	½		BT-2-10K	Filter
R37	8200Ω	½		BTS-8200	Tone Compensation
R38	15KΩ	½		BTS-15K	Tone Compensation
R39	15KΩ	½		BTS-15K	Tone Compensation
R40	2700Ω	½		BTS-2700	Tone Compensation
R41	470KΩ	½		BTS-470K	Output Grid
R42	470KΩ	½		BTS-470K	Output Grid
R43	250Ω	4		AB-250	Output Cathode (Wire Wound)
R44	4700Ω	1		BW-1-4700	Filter
R45	500Ω	4		AB-500	Filter (Wire Wound)
R46	250Ω	4			Surge Limiter (Wire Wound)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	DAVID BOGEN PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	117VAC @ .6A	700VCT .077A DC	5VAC @ 2A	6.3VAC @ 2.1A	T-362	P-6012	PH-90\	P-2952

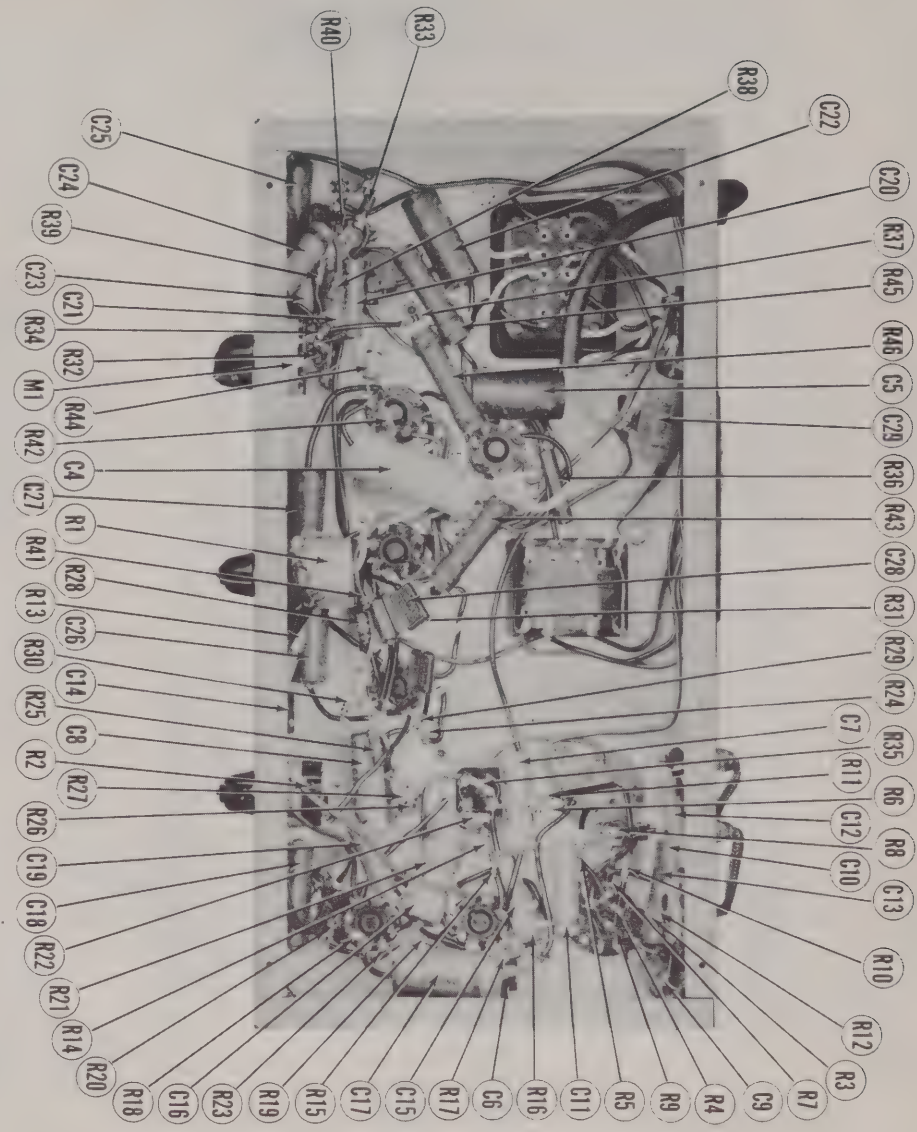
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		DAVID BOGEN PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	9KΩ CT	4Ω 8Ω 15Ω 500Ω	445Ω CT	.6Ω .85Ω 12Ω 37Ω	T260	A-3311‡	PH-70B	A-3132‡	‡Drill New Mtg. Holes.

MISCELLANEOUS

ITEM No.	PART NAME	DAVID BOGEN PART No.	NOTES
M1	Switch		Tone

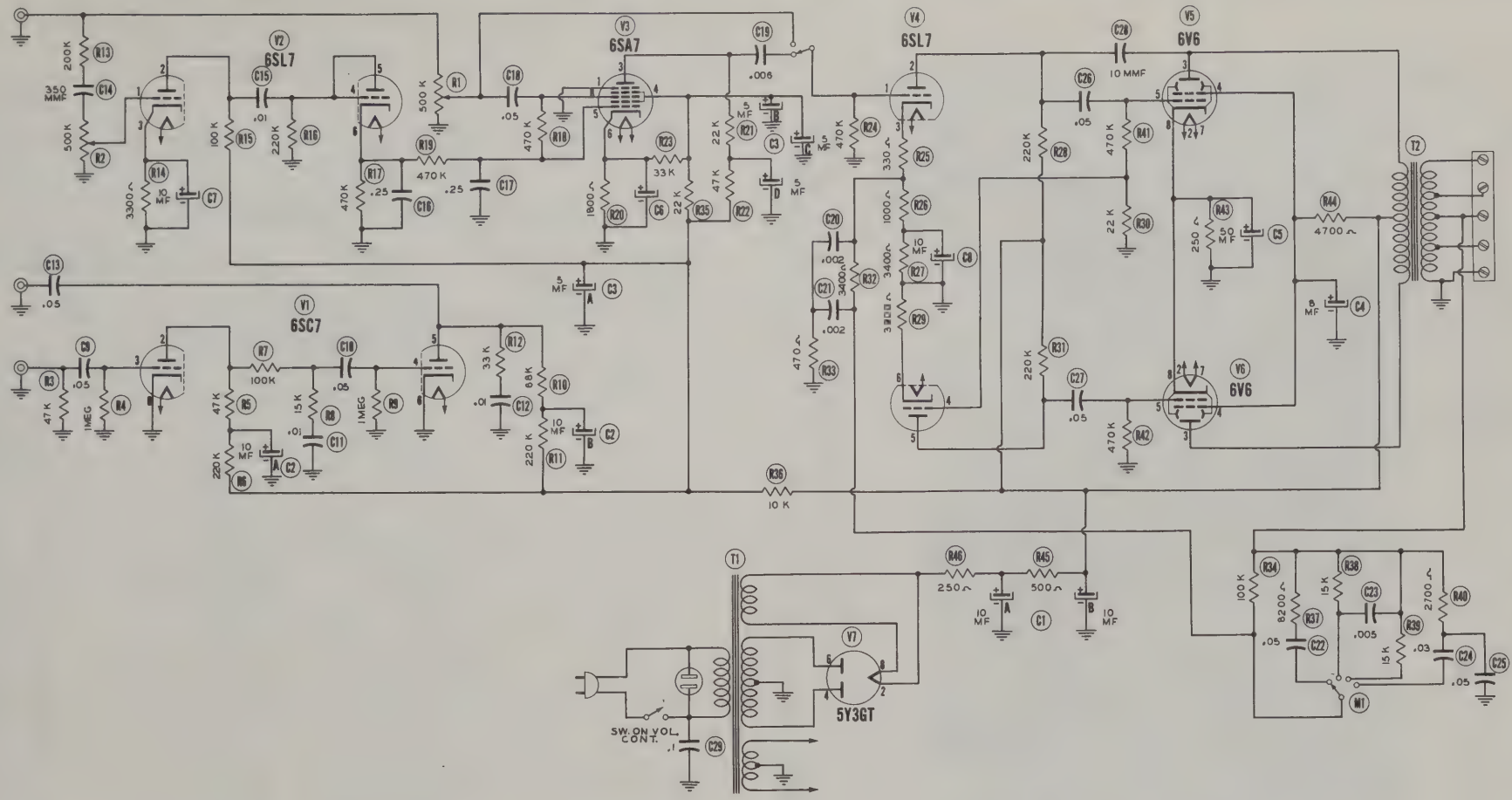
CHASSIS—BOTTOM VIEW



DATE 8/49 4916-5 SET #68 FOLDER #5

DAVID BOGEN MODEL PX10

DAVID BOGEN MODEL PX10



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0V	75VDC	-.3VDC	-.3VDC	67VDC	0V	3VAC	3VAC
V 2	6SL7GT	0V	162VDC	1.8VDC	-.1VDC	-.1VDC	.2VDC	3VAC	3VAC
V 3	6SA7	0V	3VAC	212VDC	120VDC	.1VDC	9.5VDC	3VAC	.1VDC
V 4	6SL7GT	0V	170VDC	2.2VDC	0V	155VDC	2VDC	3VAC	3VAC
V 5	6V6GT	0V	3VAC	250VDC	235VDC	0V	0V	3VAC	16.5VDC
V 6	6V6GT	0V	3VAC	250VDC	235VDC	0V	0V	3VAC	16.5VDC
V 7	5Y3GT	0V	360VDC	220VDC	350VAC	0V	350VAC	0V	350VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0Ω	†200KΩ	1 Meg.	1 Meg.	225KΩ	0Ω	.1Ω	.1Ω
V 2	6SL7GT	580KΩ	†125KΩ	3.3KΩ	†300KΩ	†300KΩ	470KΩ	.1Ω	.1Ω
V 3	6SA7	0Ω	.1Ω	†75KΩ	†30KΩ	950KΩ	1.8KΩ	.1Ω	1.4 Meg.
V 4	6SL7GT	470KΩ	†225KΩ	4.8KΩ	22KΩ	†220KΩ	3.5KΩ	.1Ω	.1Ω
V 5	6V6GT	0Ω	.1Ω	†100Ω	†5KΩ	500KΩ	Inf.	.1Ω	250Ω
V 6	6V6GT	0Ω	.1Ω	†100Ω	†5KΩ	470KΩ	Inf.	.1Ω	250Ω
V 7	5Y3GT	Inf.	60KΩ	50KΩ	125Ω	Inf.	140Ω	Inf.	60KΩ

†Measured From Pin 2 Of V7.

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1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

CHALLENGER
MODEL CC30

CHALLENGER
MODEL CC30

CHALLENGER MODEL CC30

TRADE NAME	Challenger, Model CC30
MANUFACTURER	Challenger Amplifier Co., 663 Broadway, New York 12, New York
TYPE SET	AC Operated 3 Channel Audio Amplifier
TUBES(SIX)	Types 6SC7 Mic. Pre.-Amp., 6SC7 1st AF Amp., 6SL7 2nd AF-Phase Inverter, (2) 6L6G Power Output, 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC RATING: .98 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

CHALLENGER MODEL CC30

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CHALLENGER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Mic. Pre.-Amp.	6SC7	6SC7	8S	
V2	1st AF Amp.	6SC7	6SC7	8S	
V3	2nd AF Phase Inv.	6SL7	6SL7	8BD	
V4	Power Output	6L6G	6L6G	7AC	
V5	Power Output	6L6G	6L6G	7AC	
V6	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CHALLENGER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	8	500		GL475/8-8	EB10018			CL-88	Filter Red-Black
B	8	500							Filter Blue-Yellow
C2A	10	450		AF22J	UP1145		DY-2x10-450	EL-210	▲ Filter
B	10	450							◆ Decoupling
C3	50	50		PRS50/50	BR-505		M-50-50	TA-550	Output Cath. Bypass
C4	.02	600		P688-02	GT6S2		ST-6-02	TM-12	Audio Coupling
C5	.02	600		P688-02	GT6S2		ST-6-02	TM-12	" "
C6	.02	600		P688-02	GT6S2		ST-6-02	TM-12	" "
C7	.02	600		P688-02	GT6S2		ST-6-02	TM-12	" "
C8	.05	400		P488-05	GT4S5		ST-4-05	TM-15	" "
C9	.003	600		P688-003	GT6D3	GP2M-003	ST-6-003	TM-23	Tone Compensation
C10	.003	600		P688-003	GT6D3	GP2M-003	ST-6-003	TM-23	" "
C11	.006	600		P688-006	GT6D6		ST-6-006	TM-26	" "
C12	.1	400		P488-1	GT4P1		ST-4-1	TM-1	Audio Coupling
C13	.1	400		P488-1	GT4P1		ST-4-1	TM-1	" "
C14	.02	600		P688-02	GT6S2		ST-6-02	TM-12	AF Feedback
C15	25	500		1468-000025	5W5Q25	GP1K-25	MO.5-425	MS-425	" "
C16	.1	400		P488-1	GT4P1		ST-4-1	TM-1	Line Filter

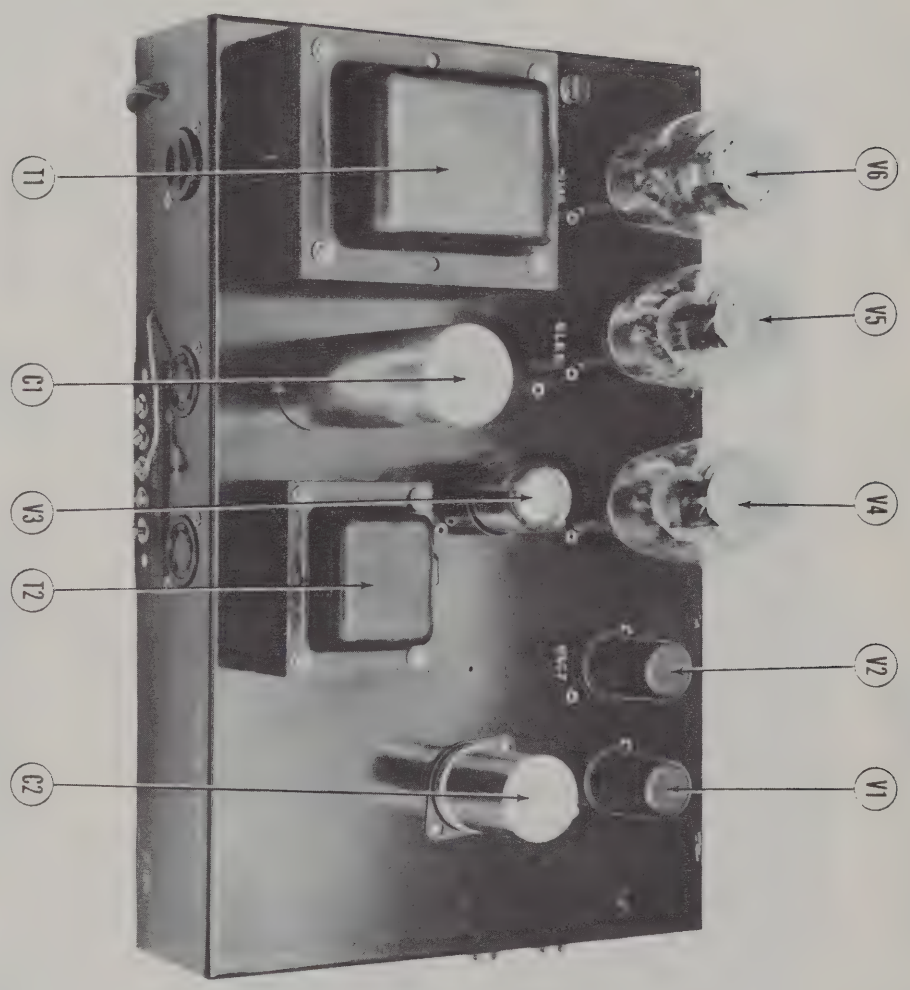
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CHALLENGER PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	500KΩ	½	V202-A	Q13-133	M-60-Z	Phono Control
R2	500KΩ	½	V202-A	Q13-133	M-60-Z	Mike 1 Control
R3	500KΩ	½	V202-A	Q13-133	M-60-Z	Mike 2 Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CHALLENGER PART No.	IRC PART No.	IDENTIFICATION CODES
R4	4.7 Meg.	½		BTS-4.7 Meg.	Mike Pre. Amp. Grid
R5	4.7 Meg.	½		BTS-4.7 Meg.	" " " "
R6	220KΩ	½		BTS-220K	Mike Pre. Amp. Plate
R7	220KΩ	½		BTS-220K	" " " "
R8	1500Ω	½		BTS-1500	1st AF Cathode
R9	100KΩ	½		BTS-100K	1st AF Plate
R10	500KΩ	½		BTS-470K	2nd AF Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CHALLENGER PART No.	IRC PART No.	
R11	220KΩ	½		BTS-220K	2nd AF Plate
R12	2000Ω	½		BTS-2200	2nd AF Cathode
R13	68KΩ	½		BTS-68K	Tone Compensation
R14	68KΩ	½		BTS-68K	" "
R15	22KΩ	½		BTS-22K	" "
R16	2000Ω	½		BTS-2200	Phase Inv. Cathode
R17	220KΩ	½		BTS-220K	Phase Inv. Plate
R18	8200Ω	½		BTS-8200	Phase Inv. Grid
R19	100KΩ	½		BTS-100K	Output Grid
R20	100KΩ	½		BTS-100K	" "
R21	200Ω	4		AB-200	Output Cathode
R22	500KΩ	½		BTS-470K	Feedback
R23	22KΩ	½		BTS-22K	"
R24	33KΩ	½		BTS-33K	Filter
R25	25KΩ	4		BT-2-47K#	Voltage Divider-Bleeder See Note
R26	6800Ω	2		BT-2-6800	Filter
R27	100Ω	4		AB-100	Surge Limiter

Note. Some models use 2 47KΩ resistors in parallel.
Two required. Connect in parallel.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CHALLENGER PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	117VAC @ .98A	740VCT @ .112A	5VAC @ 3A	6.3VAC @ 2.9A	T-365	P-6165 †	PH-120B *	P-2955 †

* Drill new mounting holes.
† Add series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CHALLENGER PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	8300Ω CT	4Ω 8Ω 15Ω 70V	280Ω CT	.5Ω .7Ω 1Ω 7.5Ω	T-279B	A-3885 *	BO-4*	A-3128*	* Drill new mounting holes.

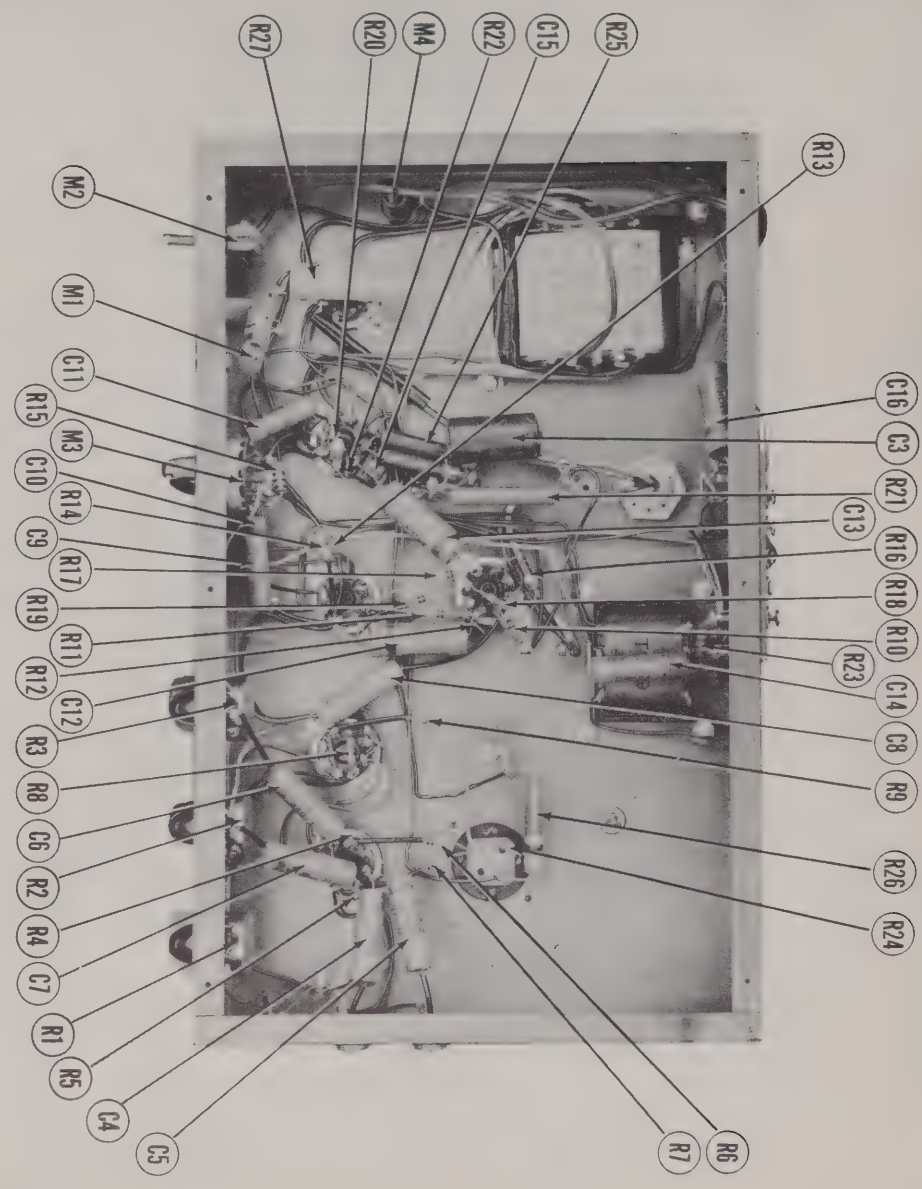
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					CHALLENGER PART No.		
M1	Bayonet	6-8V	0.15A	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	CHALLENGER PART No.	NOTES
M2	Switch		Power
M3	Switch		Tone
M4	Fuse		2 Amp.

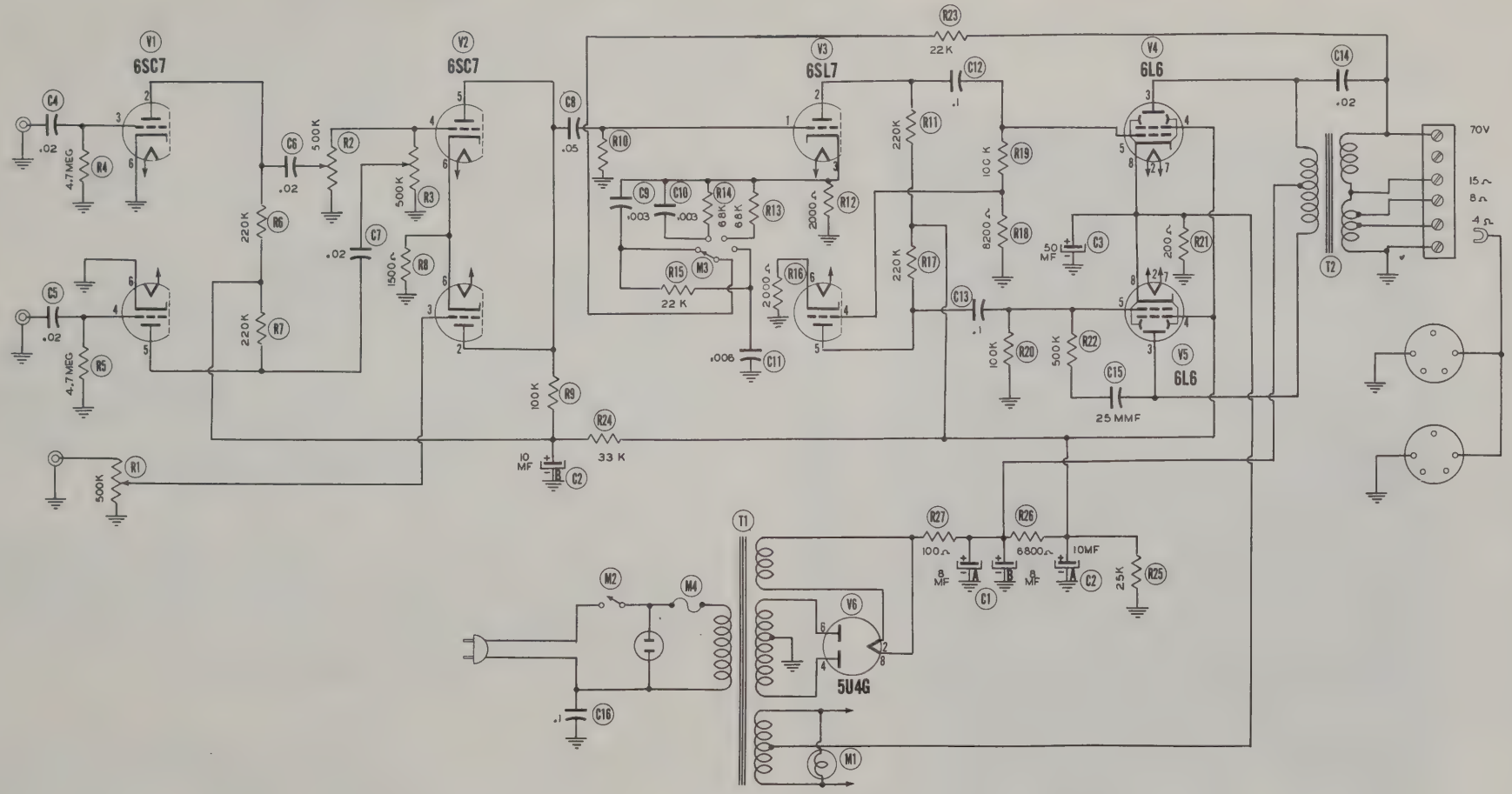
CHASSIS—BOTTOM VIEW



DATE 8/49 4916-6 SET #68 FOLDER 6

CHALLENGER MODEL CC30

CHALLENGER MODEL CC30



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0V	75VDC	-.5VDC	-.6VDC	75VDC	0V	†23.5VDC	†23.5VDC
V 2	6SC7	0V	120VDC	0V	0V	120VDC	1.6VDC	†23.5VDC	†23.5VDC
V 3	6SL7	0V	140VDC	1.4VDC	0V	140VDC	1.4VDC	†23.5VDC	†23.5VDC
V 4	6L6G	0V	†22.5 VDC	430VDC	285VDC	0V	1.4VDC	†23.5VDC	24VDC
V 5	6L6G	0V	†23.5 VDC	430VDC	285VDC	0V	0V	†23.5VDC	24VDC
V 6	5U4G	0V	445VDC	435VDC	390VDC	0V	390VAC	0V	445VDC

†6.3VAC Measured Between Pins Of Each Socket.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0Ω	*270KΩ	4.7 Meg	4.7 Meg	*270KΩ	0Ω	200Ω	200Ω
V 2	6SC7	0Ω	*130KΩ	500KΩ	280KΩ	*130KΩ	1500Ω	200Ω	200Ω
V 3	6SL7	470KΩ	*220KΩ	2KΩ	8.2KΩ	*220KΩ	2KΩ	200Ω	200Ω
V 4	6L6G	Inf.	200Ω	*235Ω	*8KΩ	110KΩ	2KΩ	200Ω	200Ω
V 5	6L6G	0Ω	200Ω	*225Ω	*8KΩ	100KΩ	650KΩ	200Ω	200Ω
V 6	5U4G	Inf.	30KΩ	30KΩ	35Ω	Inf.	38Ω	Inf.	30KΩ

*Measured From Pin 8 Of V6.

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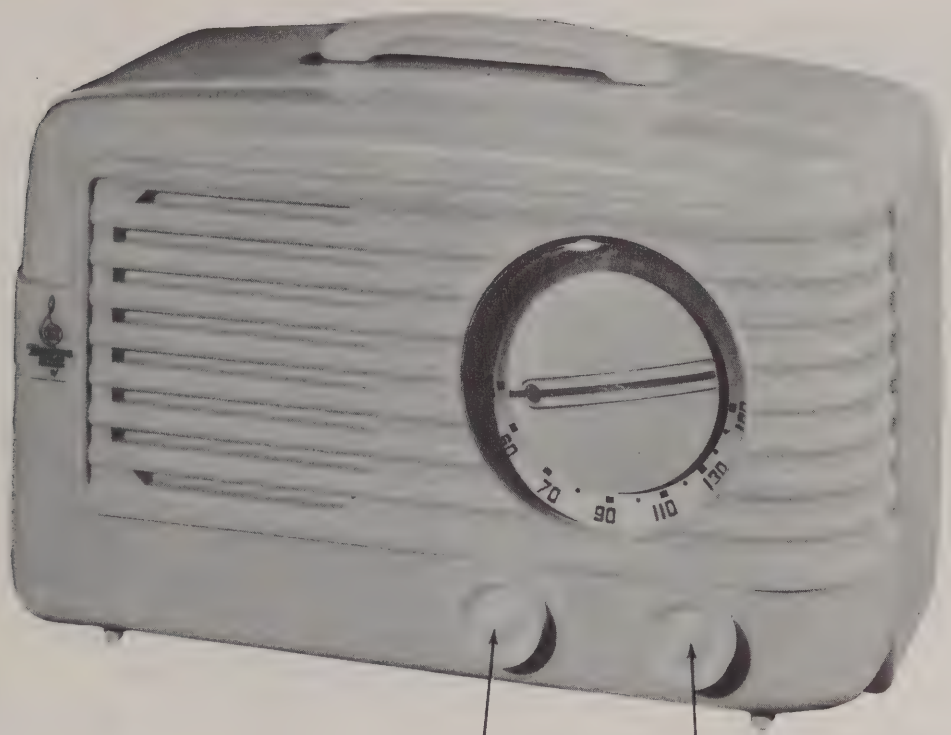
4916-6

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

EMERSON MODELS
581, 594, 595



VOLUME CONTROL
ON-OFF SWITCH

TUNING CONTROL

EMERSON MODELS
581, 594, 595

EMERSON MODEL 581

TRADE NAME	Emerson, Models 581 (Ch. 120014A, B), 594 (Ch. 120071A), 595 (Ch. 120071A)
MANUFACTURER	Emerson Radio & Phonograph Corp., 111 8th Ave., New York 11, N.Y.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna.
TUBES (FIVE)	Types 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7 DET-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC — RATING .22 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial.
Use isolation transformer if available. If not, connect a .1 MFD cap. in series with low side of signal generator and chassis.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	0.1MFD	High side to Pin 8 (Grid) of 12SA7GT (V1). Low side to chassis.	455KC	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to 0.001 MFD to reduce hum modulation.
2.	200MMF	High side to external antenna lead. Low side to chassis.	1620KC	"	"	A5	Adjust for maximum output.
3.	200MMF	"	1450KC	Tune for maximum output.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

EMERSON MODEL 581

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		EMERSON PART No.	STANDARD REPLACEMENT		
V1	Converter	12SA7GT	12SA7GT	8AD	
V2	IF Amp.	12SK7GT	12SK7GT	8N	
V3	DET-AVC-AF Amp.	12SQ7	12SQ7	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	
C1A	50	150	925009	PRSA	EDL		DSB-2x50	TA-505	Filter Red
B	50	150		150/50-50	5515		-150		Filter Green
C2	.1	200	920040	P288-1	GT2P1		ST-2-1	TM-1	AVC Filter
C3	212		910000	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	Diode RF Filter
C4	.002	600	920010	P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	Audio Coupling
C5	250	500	910000	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	AF Plate Bypass Note 1
C6	.005	600	920180	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C7	.02	400	920020	P488-02	GT4S2		ST-4-02	TM-12	Output Plate Bypass
C8	.05	400	920030	P488-05	GT4S5		ST-4-05	TM-15	Rect. Plate Bypass
C9	.2	200	920050	P488-22	GT4P2		ST-4-2	72P53	Line Isolation Note 2

Note 1. Some Models Use 212MMF In This Application.
Note 2. Used Only In Chassis 120014B.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	500KΩ	½	390015	Q11-133	AM-58-S	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions

RESISTORS

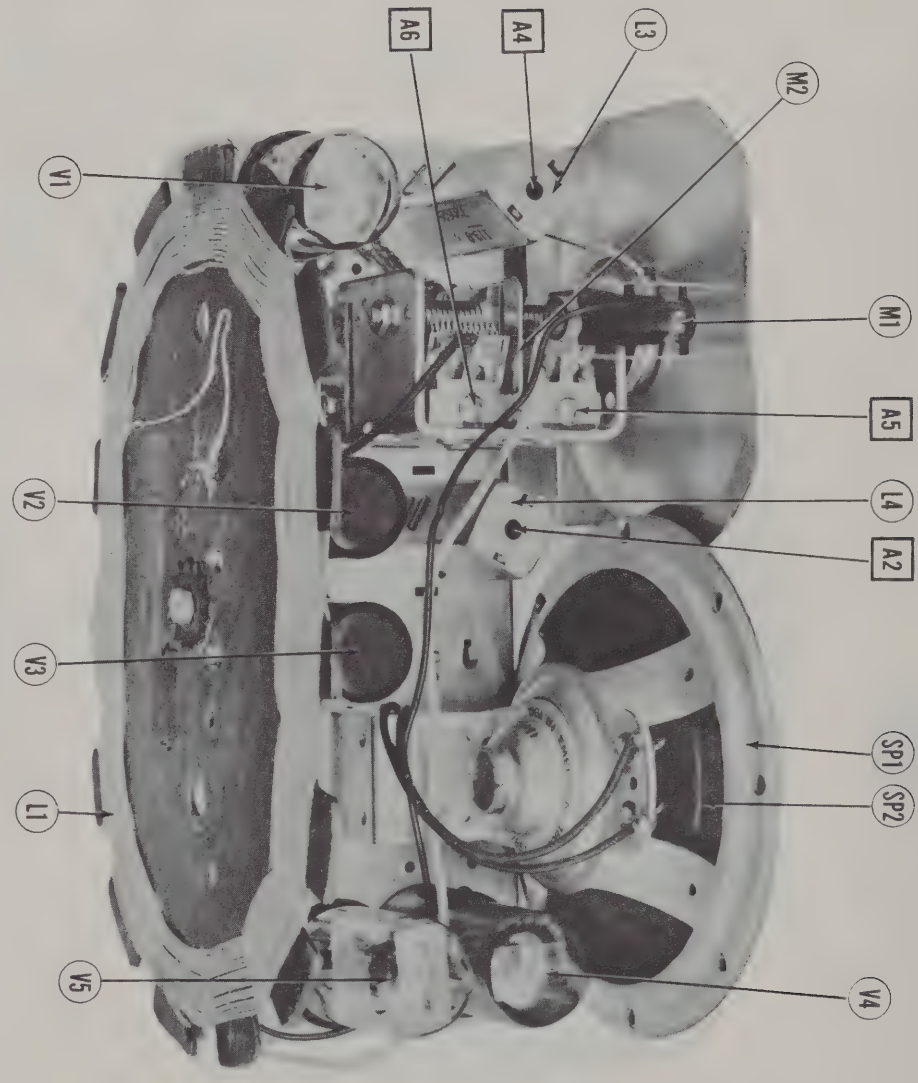
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	EMERSON PART No.	IRC PART No.	
R2	15 Meg.	½	351490	BTS-15 Meg.	AVC Network
R3	22KΩ	½	340810	BTS-22K	Osc. Grid
R4	3.3 Meg.	½	351330	BTS-3.3 Meg	AVC Network
R5	15 Meg.	½	351490	BTS-15 Meg.	AF Grid
R6	470KΩ	½	351130	BTS-470K	AF Plate
R7	470KΩ	½	351130	BTS-470K	Output Grid
R8	150Ω	½	340290	BW-½-150	Output Cathode
R9	1000Ω	1	370490	BW-1-1000	Filter
R10	39Ω	1	370150		Rect. Ballast
R11	220KΩ	½	351050	BTS-220K	Isolation Note

Note. Used Only In Chassis No. 120014B.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2600Ω	3.5Ω	158Ω TAP @ 6Ω	3.5Ω	734031	A-3330	RO-3	A-3031	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA EMERSON PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V.C. IMP.		ST-105		
SP1	PM	3.5Ω	180045	MOD.P5-X	5A07	
	CONE DIA.	V.C. DIA.				
SP2	4-3/4"	9/16"				

R F COILS

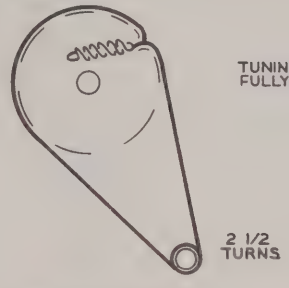
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	REPLACEMENT DATA MEISSNER PART No.	
L1	Loop Ant.	1.5Ω		700033		
L2A	Osc.Coil	1Ω	6.5Ω	716024		Used in chassis 120014A, 120071A only.
B	Osc.Coil	.5Ω	9Ω	716026		Used in chassis 120014B only.
L3	Input IF	21Ω	21Ω	720525	16-6678	
L4	Output IF	16Ω	16Ω	720529	16-6678	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA EMERSON PART No.		NOTES
M1	Bayonet	6-8V	.15	Brown	807000		Type #47

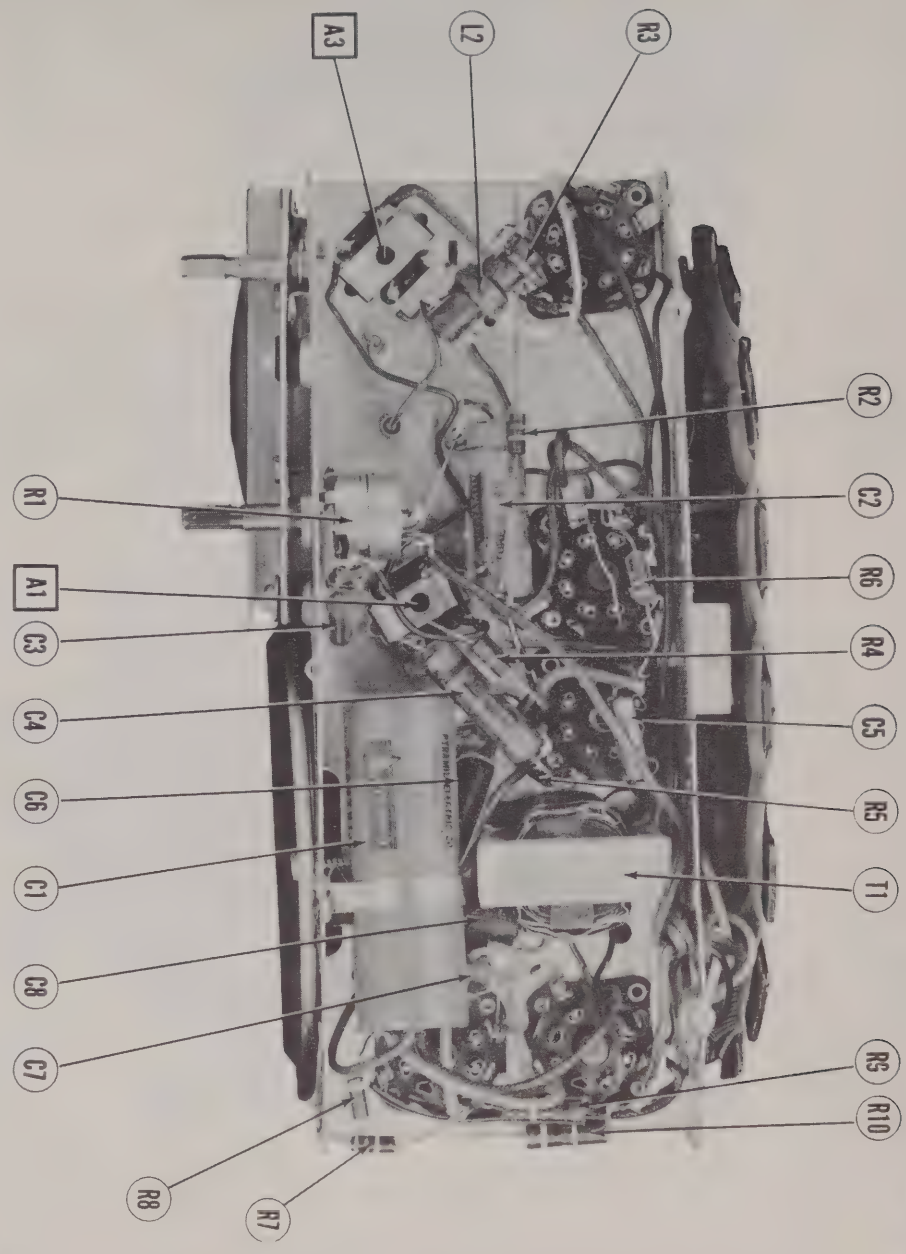
MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M2A	2 Gang Var. Cap.	920052	(15-258MMF, 31-184MMF)
B	2 Gang Var. Cap.	900035	Chassis 120071A only.
	Knob	460151	Ivory
	Knob	460107	Clear
	Dial Pointer	525042	Ivory
	Dial Pointer	525036	Black
	Handle	460151	Model 581.

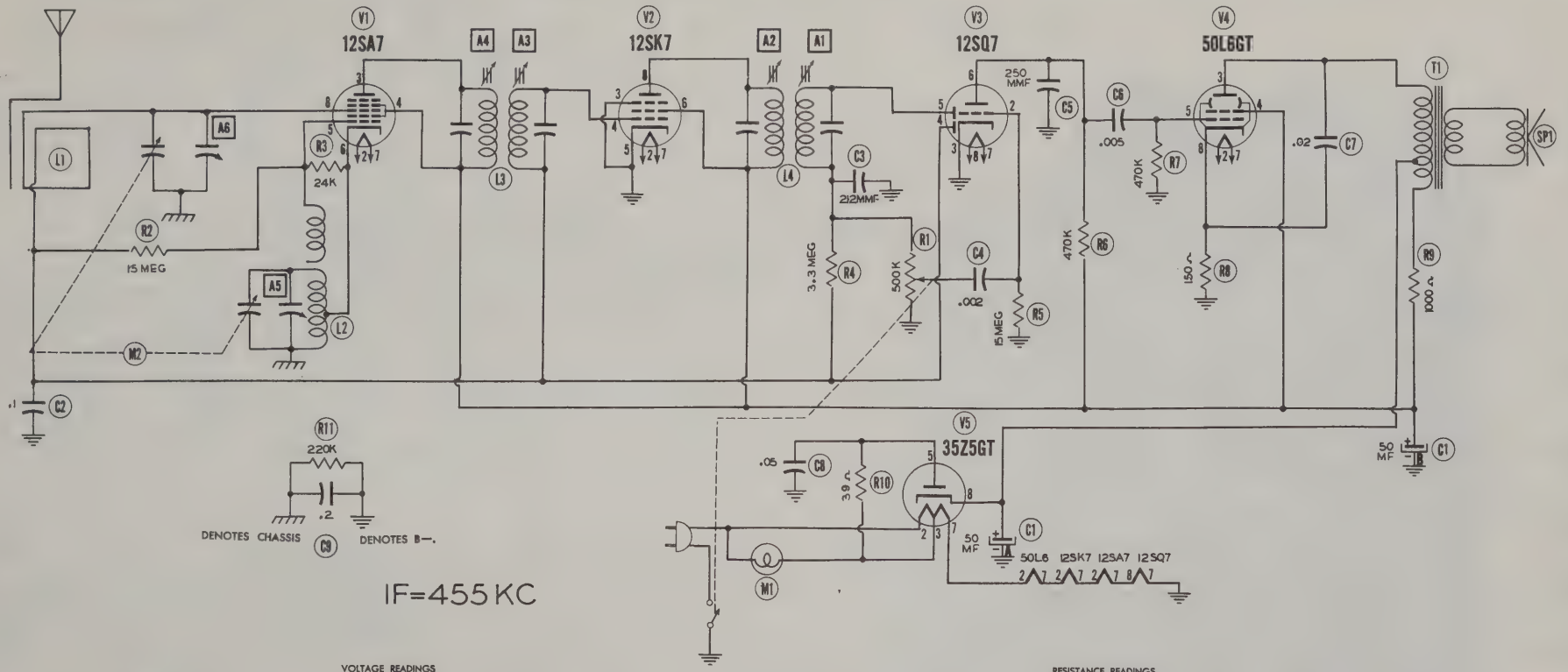


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



EMERSON MODEL 581



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0V	24VAC	85VDC	85VDC	-9.2 VDC	0V	12VAC	-.5VDC
V 2	12SK7	0V	36VAC	0V	-.5VDC	0V	85VDC	24VAC	85VDC
V 3	12SQ7	0V	-.7VDC	0V	-.4VDC	-.3VDC	50VDC	0V	12VAC
V 4	50L6GT	0V	80VAC	100VDC	85VDC	0V	0V	36VAC	5VDC
V 5	35Z5GT	0V	117VAC	105VAC	105VDC	104VAC	0V	80VAC	105VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0Ω	25Ω	†1000Ω	†1000Ω	22KΩ	.5Ω	12Ω	4 Meg.
V 2	12SK7	0Ω	38Ω	0Ω	4 Meg.	0Ω	†1000Ω	25Ω	†1000Ω
V 3	12SQ7	0Ω	15 Meg.	0Ω	4 Meg.	500KΩ	†470KΩ	0Ω	12Ω
V 4	50L6GT	Inf.	90Ω	†165Ω	†1000Ω	470KΩ	Inf.	38Ω	150Ω
V 5	35Z5GT	Inf.	125Ω	118Ω	40KΩ	160Ω	Inf.	90Ω	40KΩ

†Measured From Pin 8 Of V5.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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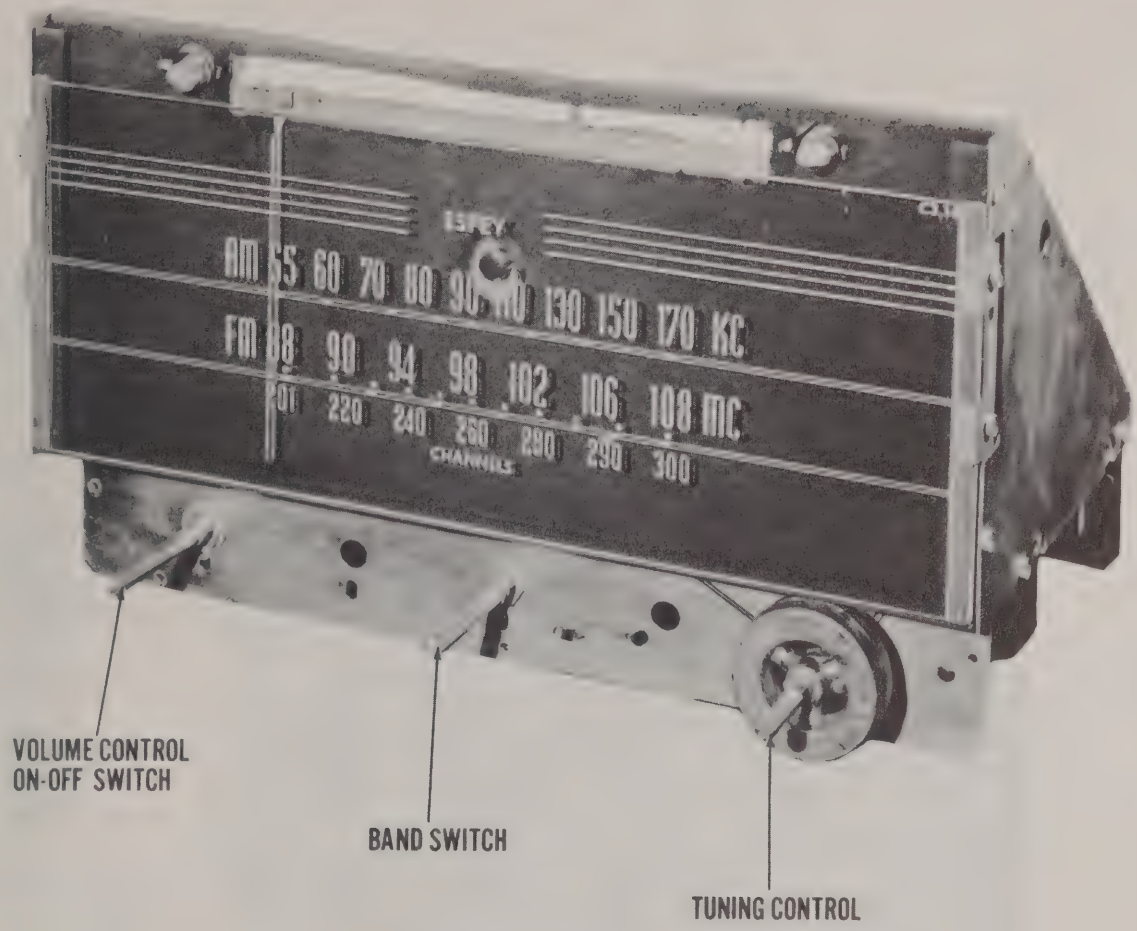
4916-7

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ESPEY
MODEL 512


ESPEY
AM 55 60 70 80 90 110 130 150 170 KC
FM 88 90 94 98 102 106 108 MC
201 220 240 260 280 290 300
CHANNELS
VOLUME CONTROL
ON-OFF SWITCH
BAND SWITCH
TUNING CONTROL

ESPEY
MODEL 512

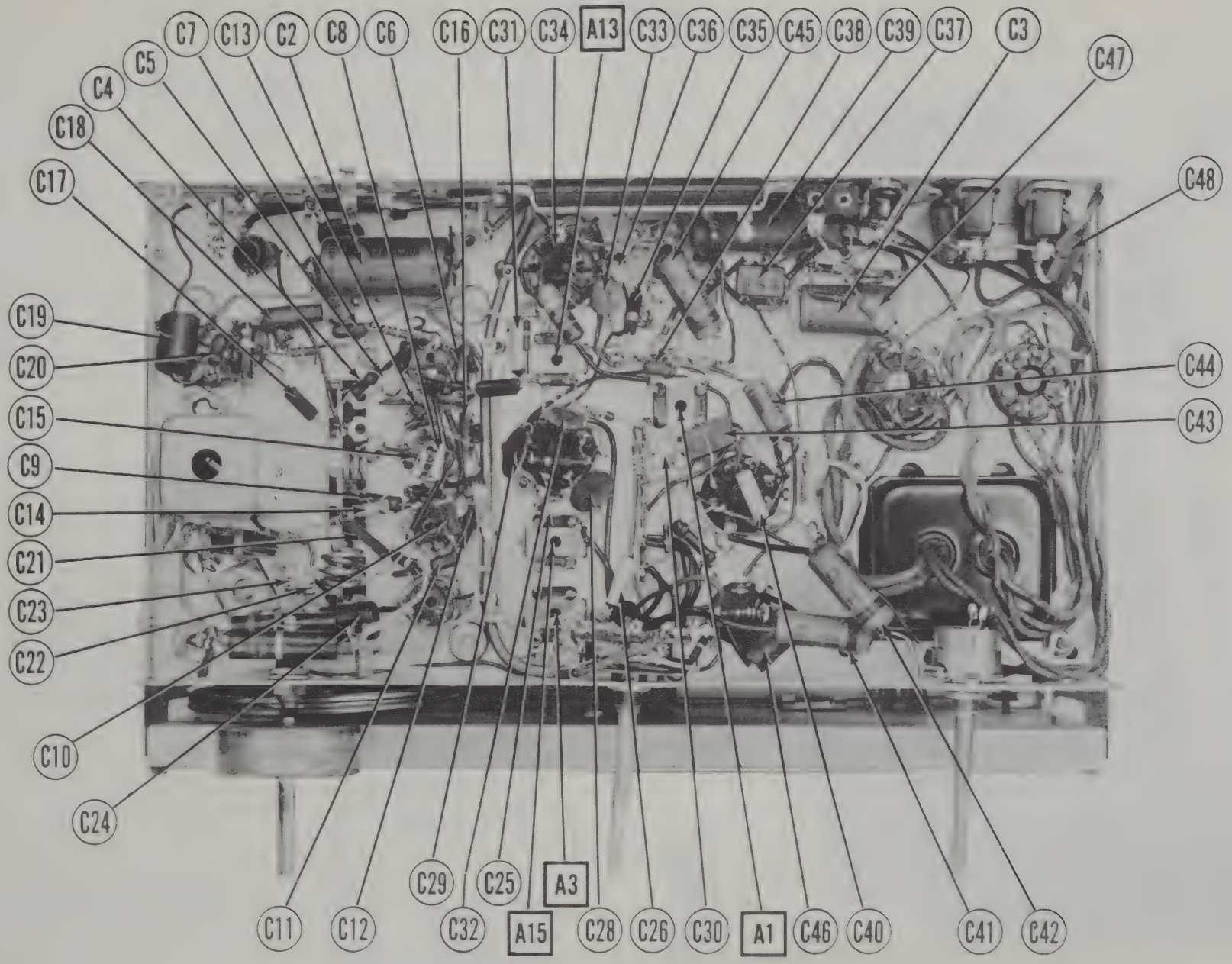
ESPEY MODEL 512

TRADE NAME	Espey, Model 512
MANUFACTURER	Espey Mfg. Co., Inc., 528 E. 72nd St., New York 21, New York
TYPE SET	AC Operated AM-FM Superheterodyne Tuner with Self-Contained Power Supply
TUBES(ELEVEN)	Types 6BA6 FM RF Amp., 6BE6 FM Mixer, 6C4 FM Oscillator, 6BA6 AM RF Amp., 6BE6 AM Converter, 6SG7 1st IF Amp., 6SH7 FM 2nd IF Amp., 6AL5 Ratio Detector, 6SQ7 DET-AVC-AF, 6U5 Tuning Indicator, 5Y3GT Rectifier
POWER SUPPLY	105-125 Volts AC RATING: .71 Amp @ 117 Volts AC
TUNING RANGE-BROADCAST	535-1720KC FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 8/49 4916-8 SET #68 FOLDER #8


C7
C13
C2
C8
C6
C16
C31
C34
A13
C33
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C45
C38
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C3
C47
C5
C4
C18
C17
C48
C19
C20
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C43
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L8
R7
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R6
L7
R16
R8
R14
R15
R40
L15
R17
R9
R32
M3
R18
R34
R33
R35
R39
R36
R1

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ESPEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	FM RF Amp.	6BA6	6BA6	7BK	
V2	FM Mixer	6BE6	6BE6	7CH	
V3	FM Osc.	6C4	6C4	6BG	
V4	AM RF Amp.	6BA6	6BA6	7BK	
V5	AM Converter	6BE6	6BE6	7CH	
V6	1st IF Amp.	6SG7	6SG7	8BK	
V7	2nd FM IF Amp.	6SH7	6SH7	8BK	
V8	Ratio Detector	6AL5	6AL5	6BT	
V9	DET-AVC-AF	6SQ7	6SQ7	8Q	
V10	Tuning Indicator	6U5	6U5	6R	
V11	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ESPEY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	N25.205	AF88J	UP 9CJ897		DY-2x40 -450	TVL-30	▲ Filter
B	40	450		PRS450/10			M-10-450		■ Filter ▲ Filter
C	10	450							
C2	8	450		PRS450/8	BR845		M-8-450	UT-8	FM Osc. Plate Dec.
C3	5	250	N25.206	PRS250/4	BR425		M-4-450	UT-42	Stabilizing Cap
C4	1500			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	RF Coupling
C5A	1500		N25.211	1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	FM RF Screen Bypass
B	1500			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	FM RF Cath. Bypass
C	1500			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	FM RF Decoupling
C6	500			1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	FM RF Fil. Bypass
C7	3000			1467-003	1W5D3	GP2M-003	MW.5-23	1FM-23	AVC Filter Note 1
C8	40			1468-0004	5W5Q4	GP1K-50	MO.5-44	1FM-44	RF Coupling
C9	2								Osc. Coupling
C10	1500			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	FM Mixer Cath. Byp.
C11	1500			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	FM Mixer Screen Byp.
C12	500			1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	FM Mixer Fil. Byp.
C13	1500			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	FM Osc. Plate Byp.
C14	40			1468-00004	5W5Q5	GP1K-50	MO.5-44	1FM-44	FM Osc. Grid Cap
C15	20		N25.220						Osc. Feedback
C16	500			1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	Filament Bypass
C17	500			1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	RF Coupling
C18	.02	200		P488-02	GT2S2		ST-4-02	TM-12	AM RF Cath. Bypass
C19	.05	400		P488-05	GT4S5		ST-4-05	TM-15	AM RF Screen Bypass
C20	1500			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	AM RF Fil. Bypass Note 2
C21	100	500		1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	AM Osc. Coupling
C22	15							MS-415	Fixed Trimmer
C23	5			1469-000005		NP0K-5	MOS.5-55	MS-55	Fixed Trimmer
C24	.05	400		P488-05	GT4S5		ST-4-05	TM-15	AM Osc. Anode Bypass
C25	2000			1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	FM Mixer Plate Dec.
C26	2000			1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	RF Bypass
C27	.05	200		P288-05	GT2S5		ST-4-05	TM-15	AVC Filter
C28	10000			P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	1st IF Cath. Bypass
C29	10000			P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	1st IF Decoupling
C30A	100		Note	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Filter
B	100		Note	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Filter
C31	2000			1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	AVC Filter
C32	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st IF Fil. Bypass
C33	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd FM IF Cath. Byp.
C34	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd FM IF Screen Byp.
C35	2000			1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	2nd FM IF Decoupling
C36	2000			1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	RF Bypass
C37	250	500		1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	Diode Load Cap
C38	3000			1467-003	1W5D3	GP2M-003	MW.5-23	1FM-23	De-emphasis
C39	.5	200		P288-5	GT2P2		ST-2-5	TC-5	DAVC Decoupling
C40	2000			1467-002	1W5D2	GP2M-002	MW.5-22	1FM-22	AVC Filter
C41	.05	200		P288-05	GT2S5		ST-4-05	TM-15	Audio Coupling
C42	.05	200		P288-05	GT2S5		ST-4-05	TM-15	Audio Coupling
C43	250	500		1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	AF Plate Bypass
C44	.01	600		P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	Audio Coupling Note 3

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ESPEY PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.
T1	117VAC @ .71A	620VCT @ .087A DC	5VAC @ 2A	6.3VAC @ 3.2A	B18.078	P-6012#	PH-90#	P-2952#

#Add Series Resistor To Reduce Plate Voltage.

R F COILS

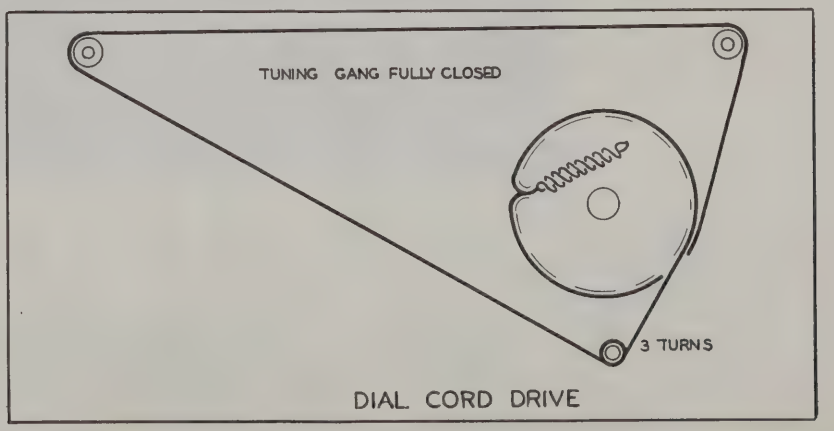
ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: ESPEY PART No.	REPLACEMENT DATA: MEISSNER PART No.
L1	AM Loop Ant	.8Ω		C5.027	
L2	AM Ant Loading Coil	1.5Ω		B2.423	
L3	AM RF Coil	90Ω	3.4Ω	B2.409	
L4	AM Osc.Coil	.8Ω	7Ω	A2.410	14-1060
L5	FM Ant.Coil	0Ω		N2.411	
L6	RF Plate Choke	1Ω		A2.402	
L7	FM RF Coil	0Ω		N2.412	
L8	FM Osc.Coil	0Ω		N2.413	
L9	AM 1st IF	10Ω	10Ω	N2.414	16-6678
L10	FM 1st IF	.8Ω	.8Ω	N2.415	
L11	FM 2nd IF	.8Ω	.8Ω	N2.415	
L12	AM 2nd IF	10Ω	10Ω	N2.414	16-6678
L13	Ratio Det.	.8Ω	.2Ω	C2.278	
L14	Fil. Choke	.2Ω		N2.416	
L15	Fil. Choke	.2Ω		N2.416	
L16	Fil. Choke	.2Ω		N2.439	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: ESPEY PART No.	NOTES
M1	Bayonet	6-8V	0.15A	Brown	I12301	Type #47
M2	Bayonet	6-8V	0.15A	Brown	I12301	Type #47

MISCELLANEOUS

ITEM No.	PART NAME	ESPEY PART No.	NOTES
M3	Switch	A12-102	Band
M4	3 Gang Var. Cap.	B6-070	(40-537MMF, 40-533MMF, 24-517MMF)



DIAL CORD DRIVE

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ESPEY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C45	.05	200		P288-05	GT2S5		ST-4-05	TM-15	Audio Coupling Note 4
C46	.05	400		P488-05	GT4S5		ST-4-05	TM-15	RF Bypass Note 2
C47	.05	400		P488-05	GT4S5		MPH-4-05	TM-15	Line Filter
C48	.05	400		P488-05	GT4S5		MPH-4-05	TM-15	Line Filter
C49	500			1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	Filament Bypass

Note. Items C30A, C30B And R31 Are Combined Into One Unit.
Note 1. Some Models Use 1500MMF In This Application.
Note 2. Not Used In All Models.
Note 3. Some Models Use .05MFD In This Application.
Note 4. Some Models Use .01MFD In This Application.

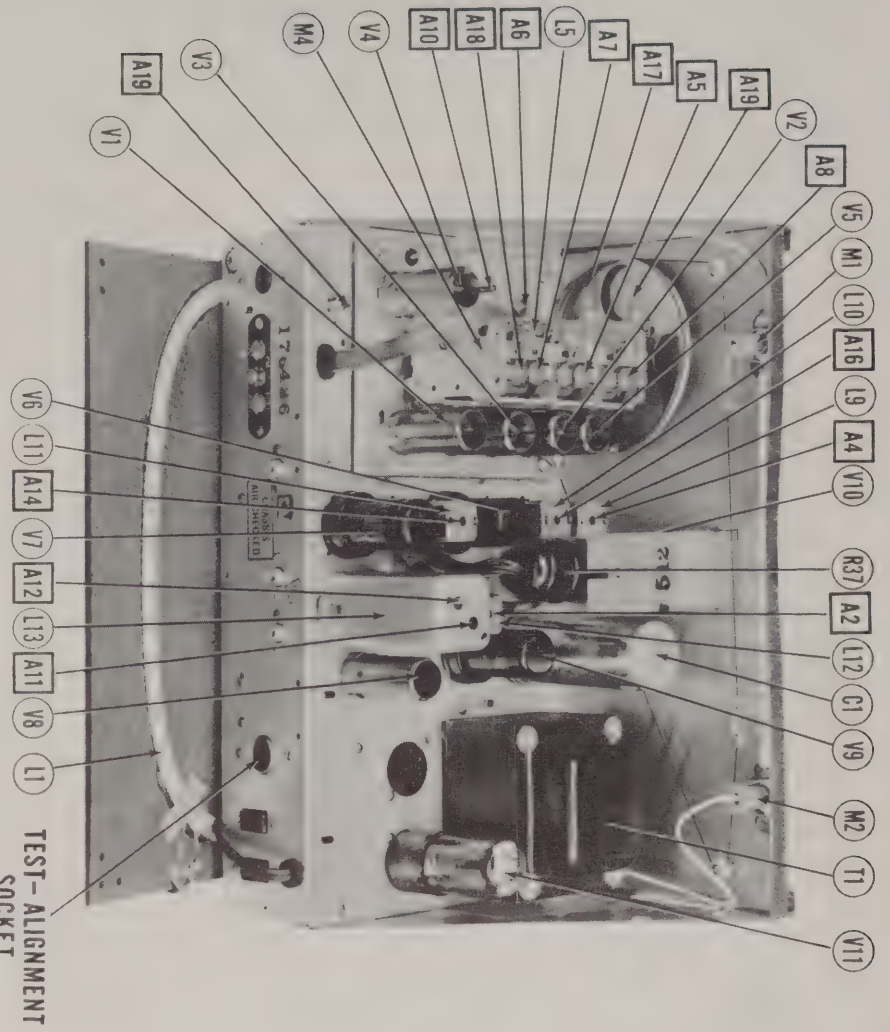
CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ESPEY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	N9.130	Q13-133	M-60-Z	Volume control
B	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions

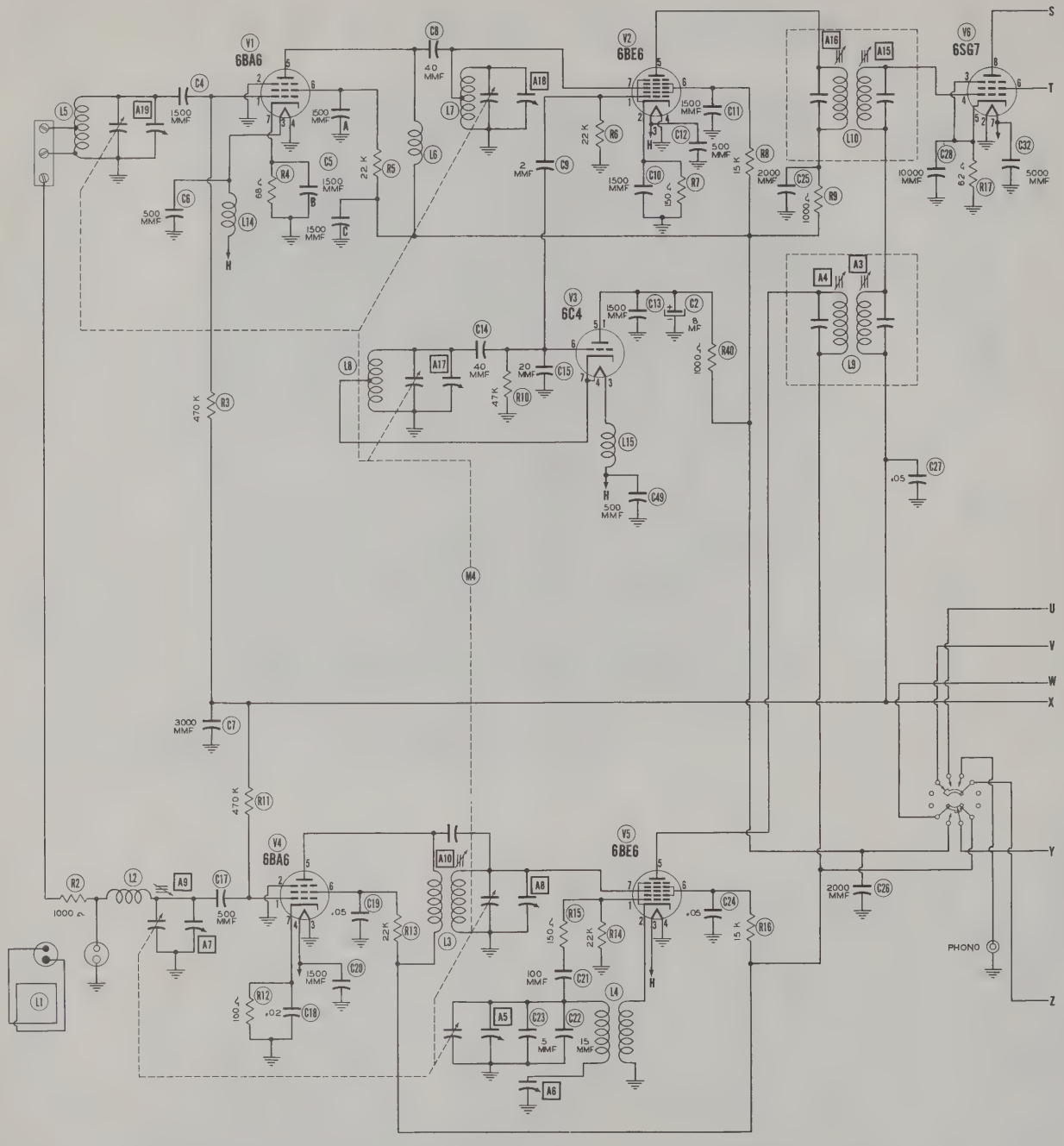
RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ESPEY PART No.	IRC PART No.	IDENTIFICATION CODES
R2	1000Ω	½		BTS-1000	Series Ext. Ant.
R3	470KΩ	½		BTS-470K	FM RF Grid
R4	68Ω	½			FM RF Cathode
R5	22KΩ	1		BTA-22K	FM RF Screen
R6	22KΩ	½		BTS-22K	FM Mixer Grid
R7	150Ω	½			FM Mixer Cathode
R8	15KΩ	2		BT-2-15K	FM Mixer Screen
R9	1000Ω	½		BTS-1000	FM Mixer Plate Decoupling
R10	47KΩ	½		BTS-47K	FM Osc. Grid
R11	470KΩ	½		BTS-470K	AM RF Grid
R12	100Ω	½			AM RF Cathode
R13	22KΩ	1		BTA-22K	AM RF Screen
R14	22KΩ	½		BTS-22K	AM Osc. Grid
R15	150Ω	½			Parasitic Suppressor
R16	15KΩ	2		BT-2-15K	AM Osc. Anode
R17	62Ω	½			1st IF Cathode
R18	2000Ω	½		BTS-2200	1st IF Plate Decoupling
R19	220KΩ	½		BTS-220K	2nd FM IF Grid
R20	68Ω	½			2nd FM IF Cathode
R21	470KΩ	½		BTS-470K	AVC Network
R22	22KΩ	1		BTA-22K	2nd FM IF Screen
R23	1000Ω	½		BTS-1000	2nd FM IF Decoupling
R24	22KΩ	½		BTS-22K	De-emphasis
R25	10KΩ	½		BTS-10K-5%	Ratio Det. Diode Load
R26	10KΩ	½		BTS-10K-5%	Ratio Det. Diode Load
R27	220KΩ	½		BTS-220K	AVC Network
R28	470KΩ	½		BTS-470K	Voltage Divider
R29	10KΩ	1		BTA-10K	Voltage Divider
R30	260KΩ	½		BTA-270K	Voltage Divider
R31	50KΩ	½		BTS-47K	Diode Filter See Note
R32	470KΩ	½		BTS-470K	Diode Load
R33	2 Meg.	½		BTS-2.2 Meg.	AVC Network
R34	2 Meg.	½		BTS-2.2 Meg.	AVC Network
R35	10 Meg.	½		BTS-10 Meg.	AF Grid
R36	220KΩ	½		BTS-220K	AF Plate
R37	1 Meg.	½		BTS-1 Meg.	Tuning Ind. Plate
R38	1000Ω	10		AB-1000	Filter
R39	47KΩ	½		BTS-47K	Filter
R40	1000Ω	½		BTS-1000	Filter

Note. Items C30A. C30B And R31 Are Combined Into One Unit.



DATE 8/46 491G-8 SET #69 FOLDER #8



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡V1	6BA6	.1VDC	0V	6.5VAC	0V	240VDC	116VDC	1.4VDC	
‡V2	6BE6	-.1VDC	1.4VDC	6.5VAC	0V	240VDC	100VDC	0V	
‡V3	6C4	230VDC	0V	6.5VAC	0V	230VDC	§-3.8 VDC	0V	
V 4	6BA6	-.2VDC	0V	0V	6.5VAC	265VDC	140VDC	1.9VDC	
V 5	6BE6	§-7.8 VDC	0V	6.5VAC	0V	265VDC	125VDC	0V	
V 6	6SG7	0V	0V	1.3VDC	-.6VDC	1.3VDC	220VDC	1.8VAC	220VDC
‡V7	6SH7	0V	0V	.9VDC	-.1VDC	.9VDC	150VDC	6.5VAC	250VDC
‡V8	6AL5	1.2VDC	1.2VDC	0V	6.5VAC	3VDC	0V	1.2VDC	
V 9	6SQ7	0V	-.4VDC	0V	-.3VDC	0V	100VDC	6.3VAC	0V
V 10	6U5	6.3VAC	26VDC	-.6VDC	260VDC	0V	0V		
V 11	5Y3GT	0V	335VDC	0V	310VAC	0V	310VAC	0V	335VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.
‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡V1	6BA6	1 Meg.	0Ω	.2Ω	0Ω	*1000Ω	*22KΩ	68Ω	
‡V2	6BE6	22KΩ	150Ω	.2Ω	0Ω	*2KΩ	*17KΩ	0Ω	
‡V3	6C4	*2KΩ	Inf.	.2Ω	0Ω	*2KΩ	47KΩ	0Ω	
V 4	6BA6	2.6 Meg	0Ω	0Ω	.2Ω	*1000Ω	25KΩ	100Ω	
V 5	6BE6	2.2KΩ	.8Ω	.2Ω	0Ω	*1000Ω	17KΩ	3.5Ω	
V 6	6SG7	0Ω	0Ω	60Ω	2.2 Meg	60Ω	*3KΩ	.2Ω	*3KΩ
‡V7	6SH7	0Ω	0Ω	68Ω	220KΩ	68Ω	*23KΩ	.2Ω	*2KΩ
‡V8	6AL5	430KΩ	430KΩ	0Ω	.2Ω	Inf.	0Ω	Inf.	
V 9	6SQ7	0Ω	10 Meg	0Ω	470KΩ	560KΩ	*270KΩ	.2Ω	0Ω
V 10	6U5	.2Ω	*1 Meg.	2.4 Meg	*1000Ω	0Ω	0Ω		
V 11	5Y3GT	0Ω	60KΩ	Inf.	110Ω	Inf.	115Ω	Inf.	0KΩ

*Measured From Pin 2 Of V11.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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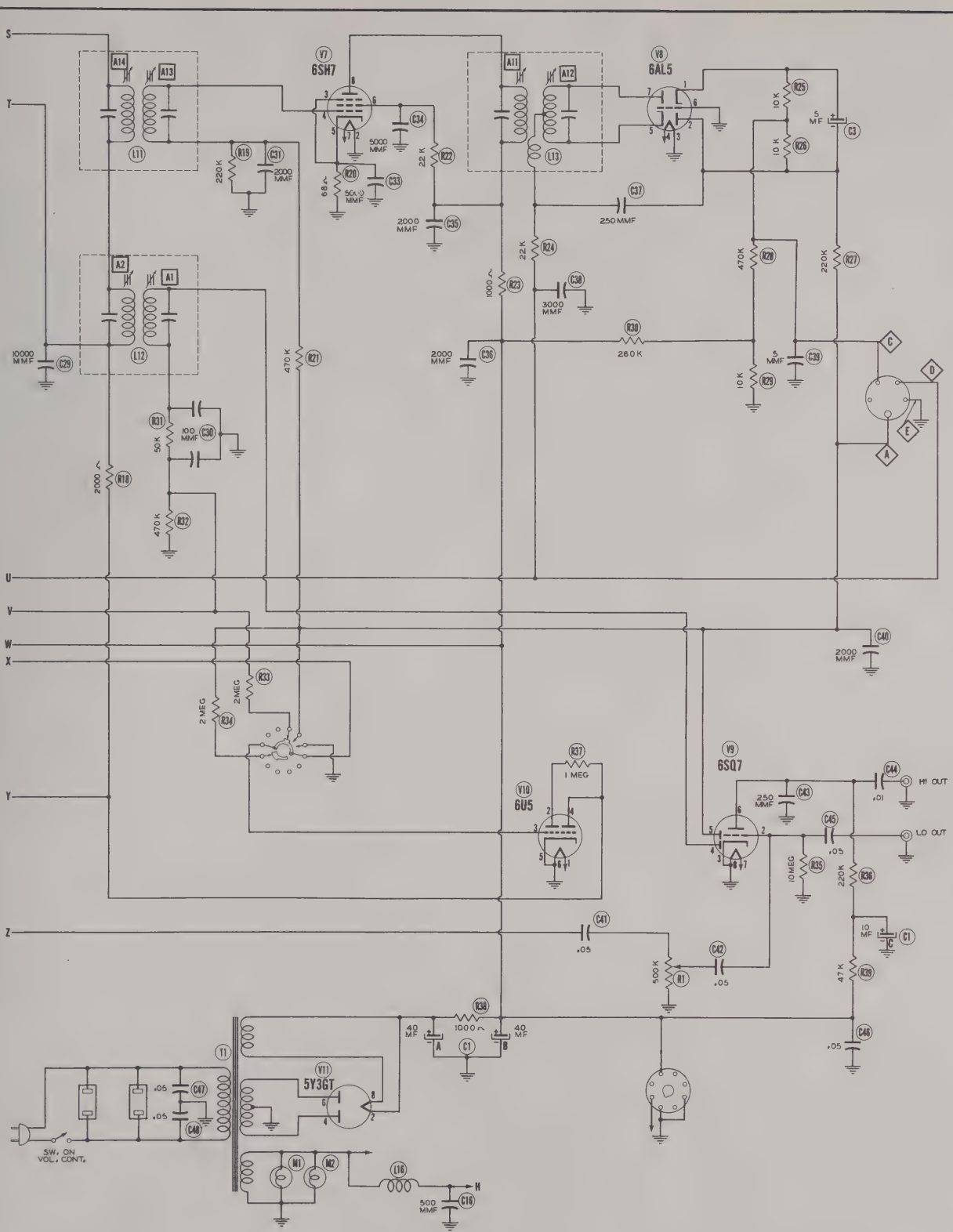

IF=455 KC AM

IF=10.7 MC FM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn tuning gang fully closed and set pointer to the last reference mark at the low frequency end of the AM dial scale.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 4 (Grid) of 6SG7 (V6). Low side to chassis.	455KC	AM	Tuning gang fully open	Across voice coil	A1,A2	Adjust for max. output.
2.	.05MFD	High side to pin 7 (Grid) of 6BE6 (V5). Low side to chassis.	"	"	"	"	A3,A4	" " " "
3.	50MMF	High side to ext. AM antenna terminal. Low side to chassis.	1720KC	"	"	"	A5	" " " "
4.	50MMF	"	535KC	"	Tuning gang fully closed	"	A6	Adjust for max. output. Repeat step 3.
5.	50MMF	"	1500KC	"	Tune for max. signal	"	A7,A8	Adjust for max. output.
6.	50MMF	"	600KC	"	"	"	A9,A10	Adjust for max. output. Repeat step 5.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to pin 4 (Grid) of 6SH7 (V7). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC Probe to Point (A) Common to point (C)	A11	Adjust for max. deflection.
8.	.01MFD	"	"	"	"	DC Probe to Point (D) Common to point (C)	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Tune signal generator 200KC either side of 10.7MC & note VTVM readings. If readings are not approx. equal retouch A11 until readings are approx.equal.
9.	.01MFD	High side to pin 4 (Grid) of 6SG7 (V6). Low side to chassis.	"	"	"	DC Probe to Point (A) Common to Point (C)	A13, A14	Adjust for max. deflection.
10.	.01MFD	High side to pin 7 (Grid) of 6BE6 (V2). Low side to chassis.	"	"	"	"	A15, A16	Adjust for max. deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to pin 4 (Grid) of 6SG7 (V6). Low side to chassis.	10.7MC (450KC Sweep)	FM	Point of non-interference	Vert.Amp. to Point (A) Low side to Point (E)	A11, A13, A14	Adjust for max. amplitude and symmetry as per Fig 1.
8.	.01MFD	High side to pin 7 (Grid) of 6BE6 (V2). Low side to chassis.	"	"	"	"	A15, A16	"
9.	.01MFD	"	"	"	"	Vert.Amp. to Point (D) Low side to Point (E)	A12	Adjust so crossover point occurs at center of pattern as per Fig 2. Slightly retouch A11 for max. amplitude and straightness of crossover lines. Continue with step 11.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11.	270Ω carbon res.	High side thru 270Ω carbon res. to FM ant. terminal "A2". Low side to "A1".	108.5MC	FM	Tuning gang fully open	DC Probe to Point (A) Common to Point (C)	A17	Adjust for max. deflection.
12.	"	"	87.5MC	"	Tuning gang fully closed	"	L8	Expand or compress coil turns of FM Osc. coil L8 for max. deflection. Repeat steps 11 and 12, if necessary.
13.	"	"	108MC	"	Tune for max. signal	"	A18, A19	Adjust for max. deflection. Check FM ant. and RF coils with tuning wand. If coils are properly aligned, insertion of either end of the tuning wand will cause a decrease in reading on the VTVM. If not, expand or compress coil turns until the above results are obtained.

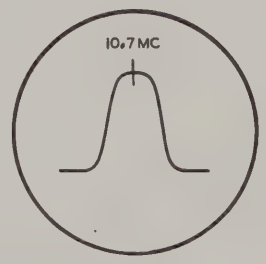


FIG. 1

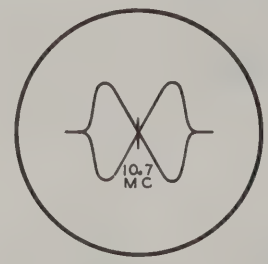
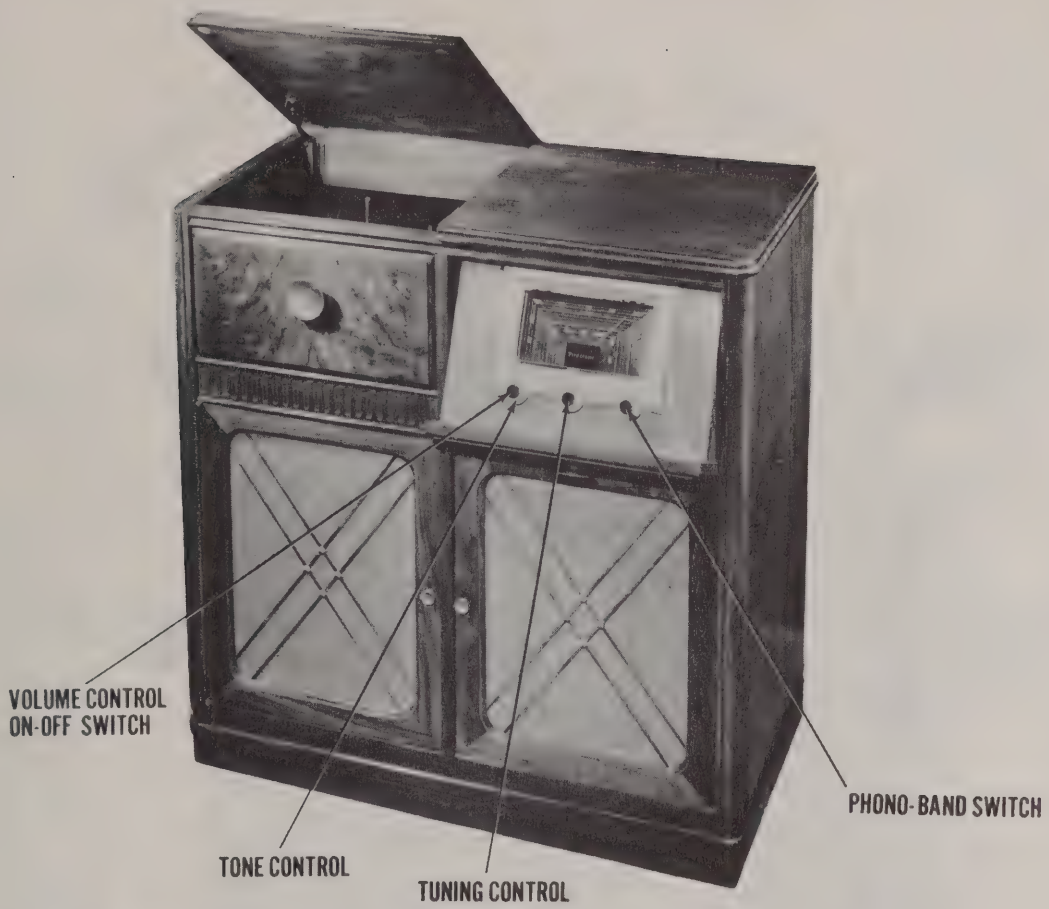


FIG. 2

FIRESTONE MODELS
4-A-64, 4-A-65



FIRESTONE MODELS
4-A-64, 4-A-65

FIRESTONE MODEL 4-A-64

TRADE NAME	Firestone, Models 4-A-64 (Vode 307-8-9039XC), 4-A-65 (Code 307-8-9039XD)
SUPPLIER	The Firestone Tire and Rubber Co., Akron, Ohio
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna.
TUBES(NINE)	Types 6AG5 RF Amp., 12AT7 Converter, 6BA6 1st IF Amp., 6BA6 FM 2nd IF Amp., 6AL5 Ratio DET-AVC, 6AT6 AM DET-AVC-AF, 6SC7 Phono Pre-Amp., 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY 110-120 Volts AC	RATING: .72 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST 540-1700KC	FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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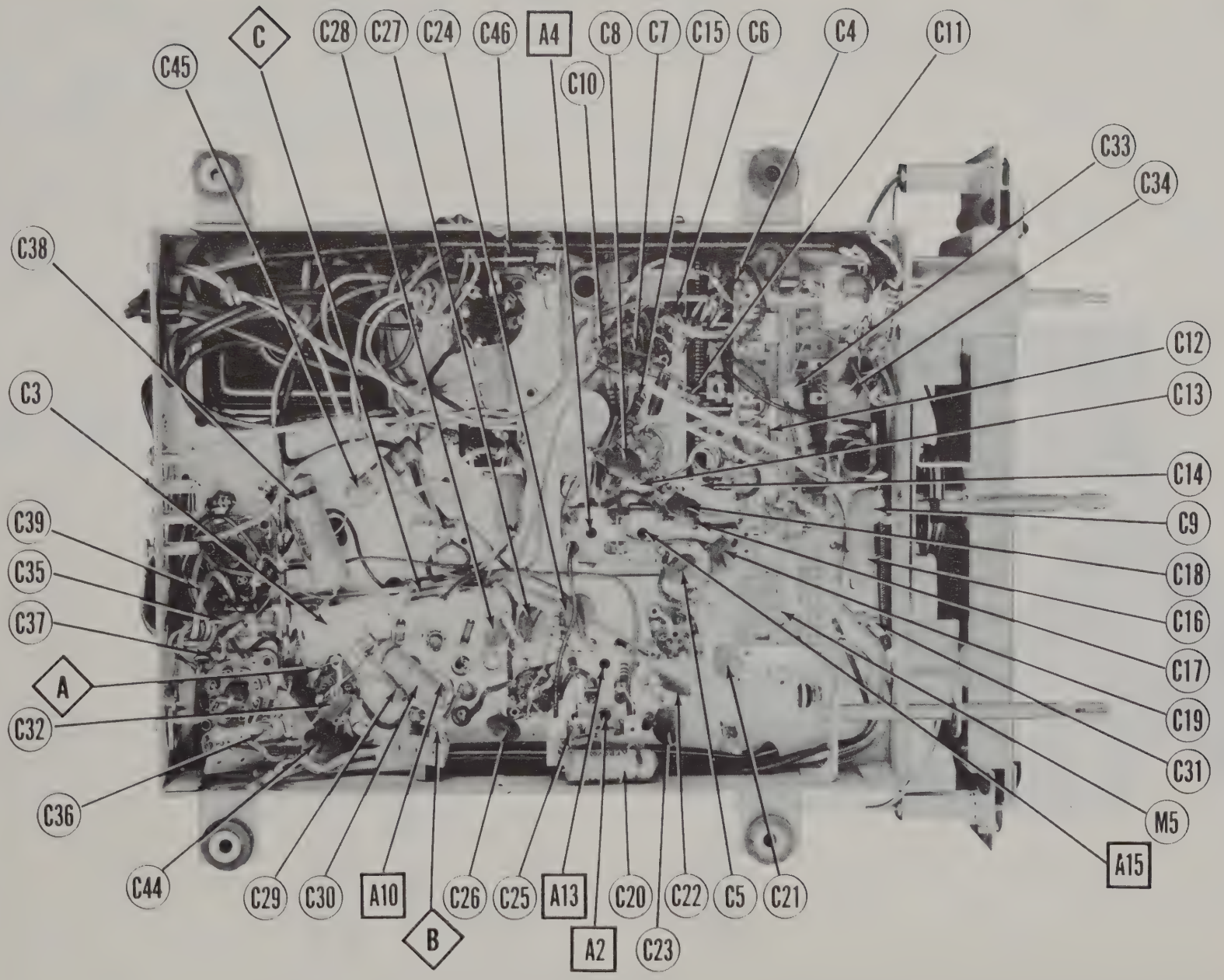
DATE 8/49 4916-9 SET #68 FOLDER #9


C
C28
C27
C24
C46
A4
C8
C7
C15
C6
C4
C11
C45
C10
C33
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C38
C12
C3
C13
C14
C39
C9
C35
C18
C37
C16
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C17
C32
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C31
C36
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A15
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R6
R2
R12
R3
R11
L4
R14
L3
R10
R41
R13
R40
R15
R16
R20
R17
R19
R18
R36
R21
R38
R37
R39
R23
R22
R35

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	12AT7	12AT7	9A	
V3	IF Amp.	6BA6	6BA6	7BK	
V4	FM 2nd IF Amp.	6BA6	6BA6	7BK	
V5	Ratio DET-AVC	6AL5	6AL5	6BT	
V6	AM-DET-AVC-AF	6SQ7	6SQ7	8Q	
V7	Phono Pre-Amp.	6SC7	6SC7	8S	
V8	Power Output	6V6GT	6V6GT	7AC	
V9	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FIRESTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	505908	AF862J4A	UP		DY-406	EL-424	◓Filter
B	30	450			43145C				■Filter
C	10	450							▲Filter
D	20	25							Output Cath. Bypass
C2A	15	400	506527	AF44J	UP		DY-2x20	EL-254	Phono Pre-Amp. Dec.
B	15	400			15D45		-450		Phono Pre-Amp. Dec.
C3	5	50	504937	PR9150/4	BR550		M-4-150	TA-55	Stabilizing Cap
C4	22		504973	1468-000025	5W5Q25	GP1K-25	MO.5-425	MS-425	RF Coupling
C5	5000		505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	AVC Filter
C6	47		504974	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	RF Cath. Bypass
C7	5000		505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Screen Bypass
C8	5000		505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Bypass
C9	5000		505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Plate Decoupling
C10	47		504974	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	RF Plate Decoupling
C11	5		504905	1468-000005	5W5V5	NP0K-5	MO.5-55	MS-55	RF Coupling
C12	1		504983	1468-000001					Osc. Coupling
C13	10		513429	1469-00001	5R5Q1	NP0K-10	MOS.5-41	MS-41	Fixed Trimmer
C14	39		513409	1468-00004	5W5Q4	NP0L-33	MO.5-44	1FM-44	Osc. Grid Cap
C15	330		506341	1468-00035	5W5T3	GP2K-300	MO.5-33	1FM-335	Mixer Cath. Bypass
C16	.01	200	512009	P488-01	GT2S1	GP2-335-01	ST-4-01	TM-11	Mixer Cath. Bypass
C17	10		506544	1468-00001	5W5Q1	GP1K-10	MO.5-41	MS-41	Voltage Divider
C18	5000		505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Osc. Feedback
C19	5000		505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Mixer Plate Dec.
C20	.05	200	512026	P288-05	GT2S5		ST-4-05	TM-15	AVC Filter
C21	5000		505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st IF Fil. Bypass
C22	5000		505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st IF Screen Bypass
C23	5000		505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st IF Plate Dec.
C24	5000		505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	AVC Filter
C25A	100		Note	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode RF Filter
B	100		Note	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode RF Filter
C26	5000		505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd IF Fil. Bypass
C27	5000		505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd IF Screen Bypass
C28	5000		505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd IF Plate Dec.
C29	330		506341	1468-0003	5W5T3	GP2K-300	MO.5-33	1FM-335	Diode Load Cap
C30	.003	600	512004	P688-003	GT6B3	GP2M-003	ST-6-003	TM-23	De-emphasis
C31	100		506340	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	RF Bypass
C32	5000		505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Ratio Det.-AVC Fil. Byp.
C33	.005	600	512006	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C34	.005	600	512006	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Tone Compensqtion
C35	.005	600	512006	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Tone Compensation
C36	.005	600	512006	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C37	100		506340	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	AF Plate Bypass
C38	.1	400	512034	P488-1	GT4P1		ST-4-1	TM-1	AF Plate Dec.
C39	.02	400	512016	P488-02	GT4S2		ST-4-02	TM-12	Audio Coupling
C40	.05	200	512026	P288-05	GT2S5		ST-4-05	TM-15	Audio Coupling
C41	.05	400	512028	P488-05	GT4S5		ST-4-05	TM-15	Audio Coupling
C42	.01	400	512010	P488-01	GT4S1		ST-4-01	TM-11	Tone Compensation
C43	.02	400	512016	P488-02	GT4S2		ST-4-02	TM-12	Audio Coupling
C44	5000		505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Tone Compensation
C45	.005	600	512006	P688-05	GT6D5		ST-6-005	TM-25	Output Plate Bypass
C46	.01	600	512256	P688-01	GT6S1		ST-6-01	TM-11	Line Filter

Note. Items C25A, C25B And R13 Are Combined Into One Unit Obtainable Under Mfgr's Part No. 506338.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
T2	7000Ω	4Ω	450Ω	.5Ω	505912	A-3849	RO-13	A-2902	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
SP1	FIELD	V.C. IMP.	506667	ST-102† MOD.P12-S	12A6A	†Replace output transformer to match 6-8Ω voice coil.
	FM	4.0Ω				
SP2	CONE DIA.	V.C. DIA.				
	11-7/8"	1"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: MEISSNER PART No.
L1	AM Loop Ant	.1Ω		506670	
L2	FM Ant.Coil	0Ω		506353	
L3	AM Ant.Coil	.1Ω	2Ω	506354	
L4	RF Choke	1Ω		506337	
L5	AM RF Coil	80Ω	3Ω	506345	
L6	FM RF Coil	0Ω		506351	
L7	Filament Choke	.1Ω		505075	
L8	AM Osc.Coil	12Ω		506335	
L9	FM Osc.Coil	0Ω		506352	
L10	FM 1st IF	1Ω	.5Ω	506080	
L11	AM 1st IF	9.5Ω	9.5Ω	506333	16-6678
L12	FM 2nd IF	1.5Ω	.5Ω	505905	
L13	AM 2nd IF	12Ω	12Ω	505797	16-6678
L14	Ratio Det.	1Ω	0Ω	506332	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA	NOTES
M1 Thru M4	Bayonet	6-8V	.15	Brown	118921		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M5	Switch	506347	Band-Phono
M6	2 Gang Var. Cap.	506348	(30-528MMF, 16-187MMF)
A16	Trimmer	506336	FM Osc. Adj.
	Cabinet	506683	Model 4-A-64
	Cabinet	506664	Model 4-A-65
	Dial Scale	506368	Glass
	Dial Pointer	506370	
	Knob	506381	Volume
	Knob	506382	Tone
	Knob	506383	Tuning
	Knob	506384	FM-AM-Phono

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	FIRESTONE PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	2 Meg.	½	505911			Volume control and switch (Dual)
B	2 Meg.	½				Tone control (Concentric)

RESISTORS

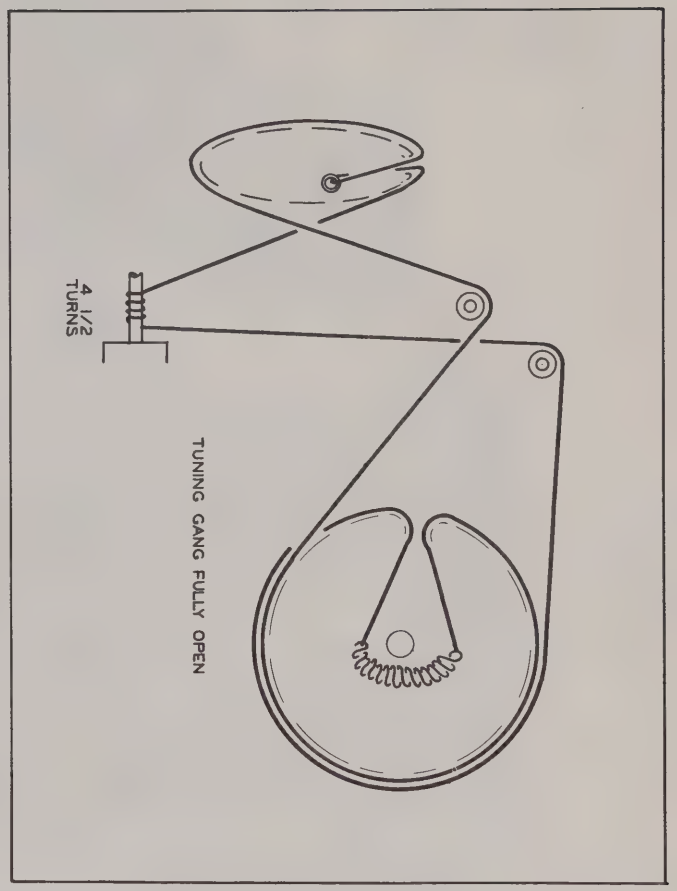
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	FIRESTONE PART No.	IRC PART No.	
R2	82Ω	½	510017	BW-½-82	RF Cathode
R3	33KΩ	½	510164	BTS-33K	RF Screen
R4	1000Ω	½	510137	BTS-1000	RF Plate Decoupling
R5	1800Ω	½	510041	BTS-1800	Mixer Cathode
R6	1000Ω	½	510137	BTS-1000	Mixer Plate Decoupling
R7	10KΩ	½	510055	BTS-10K	Osc. Grid
R8	1000Ω	½	510137	BTS-1000	Osc. Plate Decoupling
R9	47KΩ	½	510067	BTS-47K	AVC Network
R10	2.2 Meg.	½	510093	BTS-2.2 Meg.	AVC Network
R11	39KΩ	½	510165	BTS-39K	1st IF Screen
R12	1000Ω	½	510137	BTS-1000	1st IF Plate Decoupling
R13	47KΩ	½	Note	BTS-47K	Diode Filter
R14	470KΩ	½	510085	BTS-470K	Diode Load
R15	39KΩ	½	510165	BTS-39K	2nd IF Screen
R16	1000Ω	½	510137	BTS-1000	2nd IF Plate Decoupling
R17	18KΩ	½	510059	BTS-18K	De-emphasis
R18	8200Ω	½	510053	BTS-8200	Ratio Det. Diode Load
R19	8200Ω	½	510053	BTS-8200	Ratio Det. Diode Load
R20	2.2 Meg.	½	510093	BTS-2.2 Meg.	AVC Network
R21	15 Meg.	½	510098	BTS-15 Meg.	AF Grid
R22	2.2 Meg.	½	510093	BTS-2.2 Meg.	AF Plate
R23	220KΩ	½	510079	BTS-220K	AF Plate Decoupling
R24	68KΩ	½	510070	BTS-68K	Tone Compensation
R25	6800Ω	½	510152	BTS-6800	Phono Pick Up Shunt
R26	3.3 Meg.	½	510194	BTS-3.3 Meg.	Phono Pre-Amp. Grid
R27	68KΩ	½	510170	BTS-68K	Phono Pre-Amp. Plate
R28	220KΩ	½	510179	BTS-220K	Filter
R29	100KΩ	½	510173	BTS-100K	Tone Compensation
R30	27KΩ	½	510162	BTS-27K	Tone Compensation
R31	3.3 Meg.	½	510194	BTS-3.3 Meg.	Phono Pre-Amp. Grid
R32	33KΩ	½	510164	BTS-33K	Phono Pre-Amp. Plate
R33	220KΩ	½	510179	BTS-220K	Filter
R34	68KΩ	½	510170	BTS-68K	Tone Compensation
R35	220KΩ	½	510079	BTS-220K	Tone Compensation
R36	68KΩ	½	510070	BTS-68K	Tone Compensation
R37	470KΩ	½	510085	BTS-470K	Output Grid
R38	330Ω	½	510128	BW-½-330	Output Cathode
R39	47Ω	½	510013		Parasitic Suppressor
R40	600Ω	5	510709	AB-600	Filter (Wire Wound)
R41	600Ω	5	510709	AB-600	Filter (Wire Wound)

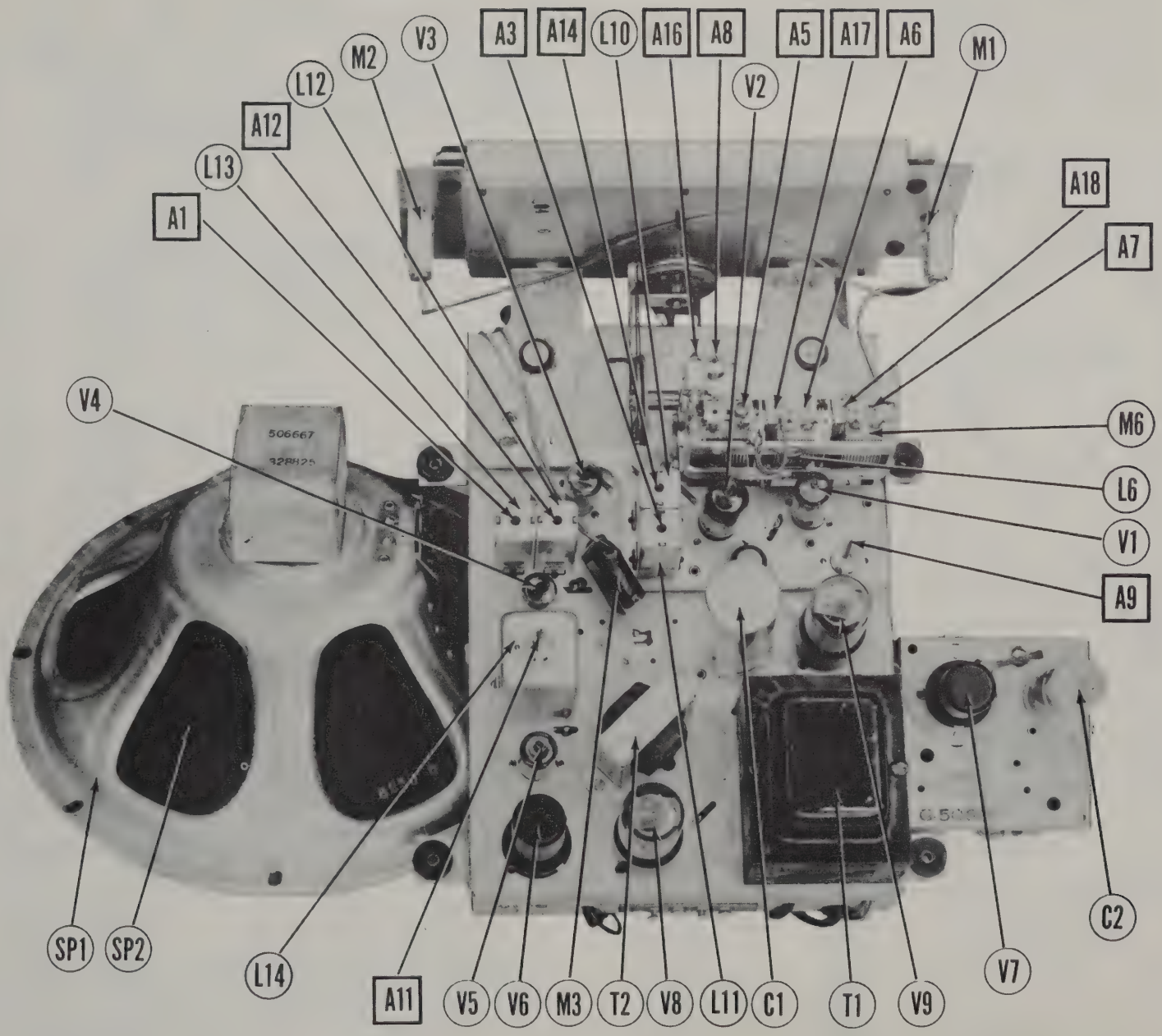
Note. Items C25A, C25B And R13 Are Combined Into One Unit Obtainable Under Mfgr's Part No. 506338.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	FIRESTONE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	117VAC @ .72A	630VCT @ .09A DC	5VAC @ 2A	6.3VAC @ 3.0A	506709	P-6012‡	PH-90‡	P-2952‡

‡Drill New Mtg. Holes.




A3
A14
L10
A16
A8
A5
A17
A6
M1
V3
M2
L12
A12
L13
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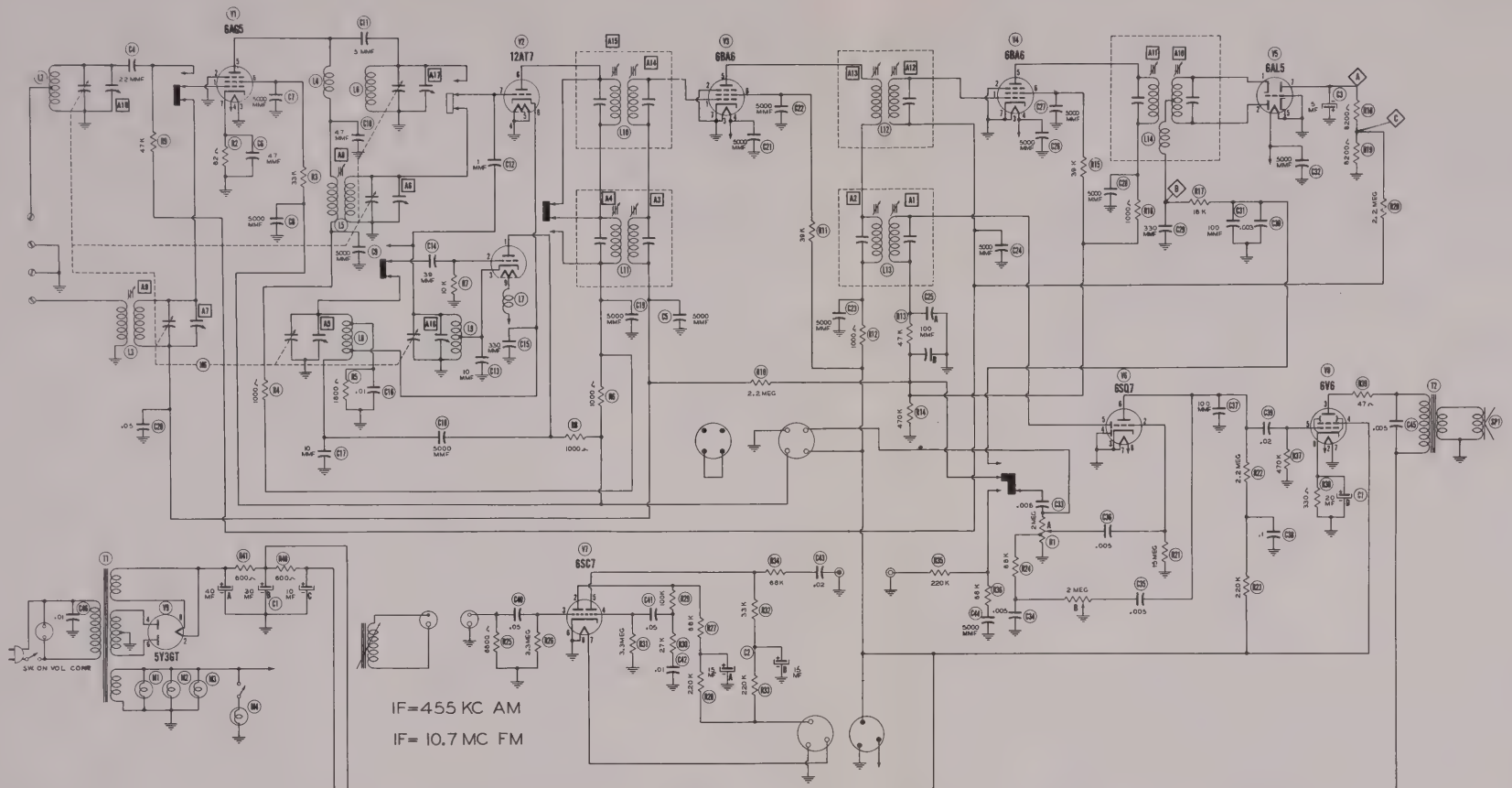
V2
A18
A7
V4
M6
L6
V1
A9
C2
SP1
SP2
L14
A11
V5
V6
M3
T2
V8
L11
C1
T1
V9
V7



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.5VDC	8VDC	0V	6.3VAC	210VDC*	150VDC	.8VDC		
V2	12AT7	210VDC	§-10VDC	0V	0V	0V	220VDC	0V	6.2VDC	6.3VAC
#V2A	12AT7	215VDC	§-.4VDC	0V	0V	0V	225VDC	0V	7.7VDC	6.3VAC
V 4	6BA6	-.5VDC	0V	0V	6.3VAC	220VDC	85VDC	0V		
#V4	6BA6	-.5VDC	0V	0V	6.3VAC	225VDC	90VDC	0V		
#V5	6AL5	-1VDC	.1VDC	0V	6.3VAC	0V	0V	0V		
V6	6SQ7	0V	-.3VDC	0V	0V	-.3VDC	50VDC	0V	6.3VAC	
#V7	6SC7	0V	########	-.3VDC	-.3VDC	65VDC	0V	6.3VAC	0V	
V8	6V6GT	0V	6.3VAC	250VDC	250VDC	0V	0V	0V	11VDC	
V9	5Y3GT	0V	320VDC	0V	320VAC	0V	320VAC	0V	320VDC	

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	2.7 Meg	82Ω	0Ω	.1Ω	12KΩ	135KΩ	88Ω		
#V2A	12AT7	12KΩ	10KΩ	0Ω	0Ω	0Ω	12KΩ	3.5Ω		.1Ω
#+2B	12AT7	12KΩ	10KΩ	0Ω	0Ω	0Ω	12KΩ	0Ω	1.6KΩ	.1Ω
V4	6BA6	2.7 Meg	0Ω	0Ω	.1Ω	12KΩ	140KΩ	0Ω	1.8KΩ	
#V4	6BA6	2.1 Meg	0Ω	0Ω	.1Ω	12KΩ	140KΩ	0Ω		
#V5	6AL5	Inf.	Inf.	0Ω	.1Ω	0Ω	Inf.	18KΩ		
V6	6SQ7	0Ω	1½ Meg.	0Ω	0Ω	500KΩ	82 K Meg.	0Ω	.1Ω	
#V7	6SC7	0Ω	1200Ω	3.3 Meg	3.3 Meg	125KΩ	0Ω	.1Ω	0Ω	
V8	6V6GT	0Ω	.1Ω	1100Ω	11.2KΩ	470Ω	Inf.	0Ω	330Ω	
V9	5Y3GT	Inf.		Inf.	110Ω	Inf.	100Ω	Inf.	220KΩ	

#V & R Taken in Phono Position.
*Measured From Pin 2 Of V9.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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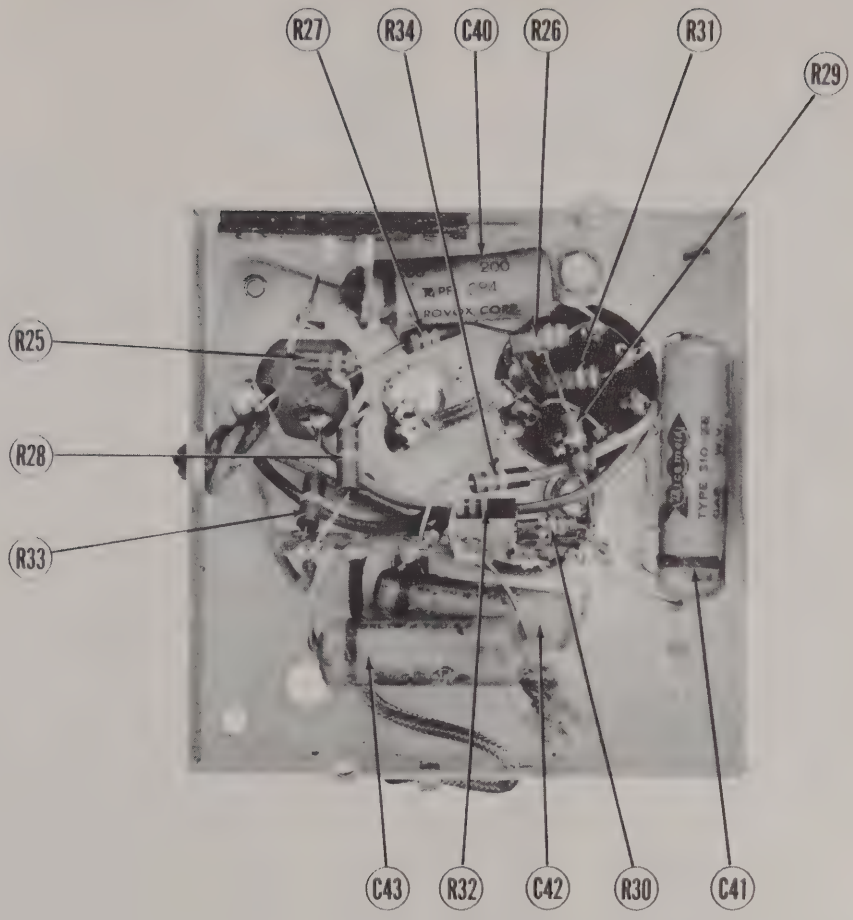


DISASSEMBLY INSTRUCTIONS

1. Remove 16 screws from rear cover.
2. Disconnect 2 loop wires from terminals on rear of receiver chassis.
3. Remove loop by pushing up, push bottom in, and lower loop.
4. Remove 2 wires from speaker by pulling out.
5. Remove 4 11/16" hex nuts from speaker ring. Remove speaker.
6. Remove FM antenna lead from terminals on end of receiver chassis.
7. Remove with slight pull, plug on left end of receiver chassis from phono pre-amp unit.
8. Disconnect phono motor plug.
9. Disconnect large plug from phono pre-amp unit.
10. Remove screw holding lamp bracket, inside bottom front of cabinet. Remove lamp assembly.
11. In phono compartment, top right front corner, remove two screws holding lamp and switch assembly. Withdraw assembly and unsolder two leads. Feed wires to rear of cabinet.
12. Remove 3 push-on type knobs from receiver controls.
13. Remove 1 11/32" hex nut from inside top center of dial glass. Remove "L" type bracket.
14. Remove 2 11/32" hex nuts and rubber spacers from lower two corners of receiver chassis.
15. Using care to hold receiver chassis, remove 4 1/4" bolts, 2 on each side near corners of receiver chassis. Remove chassis.
16. Remove plug on top of phono pre-amp unit.
17. Remove 2 11/32" hex nuts from diagonal corners of phono pre-amp unit. Remove unit.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

The built-in loop antenna does not have to be connected during the AM-IF alignment procedure but must be connected for the AM antenna, RF, and Osc. adjustments. Do not use extention leads to the loop if left in the cabinet as this would cause misalignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to center AM stator on tuning gang. Low side to chassis.	455KC	AM (center pos.)	Point of non-interference	Across voice coil	A1,A2, A3,A4	Adjust for max. output. Repeat to assure accurate alignment.
2.	260MMF	High side to external antenna clip. Low side to chassis.	1500KC	"	1500KC	"	A5	Adjust for max. output.
3.	260MMF	"	"	"	Tune for max. signal	"	A6,A7	" " " "
4.	260MMF	"	600KC	"	"	"	A8,A9	Adjust for max. output. Repeat steps 2, 3, and 4 until one adjustment no longer detunes the others.

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to center FM stator of tuning gang. Low side to chassis.	10.7MC (Unmod.)	FM (CCW position)	Point of non interference	DC Probe to Point (A) Common to chassis.	A11, A12, A13, A14, A15	Adjust for maximum deflection.
6.	.01MFD	"	"	"	"	DC Probe to Point (B) Common to Point (C)	A10	Adjust for zero reading. A positive and negative reading will be found on either side of the correct setting.
7.	300Ω carbon res.	High side thru 300Ω resistor to left hand FM antenna terminal Low side to chassis.	106MC	"	106MC	DC Probe to Point (A) Common to chassis.	A16	Adjust for maximum deflection.
8.	"	"	"	"	Tune for maximum signal	"	A17, A18	Adjust for maximum deflection.
9.	"	"	"	"	"	"	A14, A15	Retouch for maximum deflection.
10.	Check calibration at 90MC and 98MC. If calibration error is greater than 300KC, make the following adjustments. If pointer falls above 90MC, slightly expand the windings of the FM oscillator coil. Repeat steps 7 and 8. If it is impossible to obtain the 106MC signal at the proper point, adjust the spacing of the gang condenser plates. If the pointer falls below 90MC, slightly compress the FM Oscillator coil turns and repeat steps 7 and 8. If necessary, bend the gang condenser plates. If the antenna and RF coils do not track properly, adjust the respective coils and gang condenser plates in same manner as outlined above.							

FIG. 1

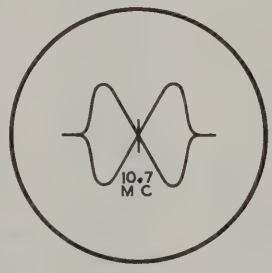


FIG. 2

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 400KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection. If the 120∿ sawtooth voltage is not available use 60∿ internal sweep of scope. This will result in a single trace pattern instead of a double trace pattern. Figures 2 and 3 show patterns obtained with the different sweep voltages.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to center FM stator of tuning gang. Low side to chassis.	10.7MC (400KC Sweep)	FM	Point of non interference	Vert.Amp. to Point (A) Low Side to chassis.	A11, A12, A13, A14, A15	Disconnect stabilizer capacitor (C3). Adjust for maximum amplitude & symmetry as per Fig 1.
6.	.01MFD	"	"	"	"	Vert.Amp. to Point (B) Low side to chassis.	A10	Reconnect stabilizer cap (C3). Adjust A10 so crossover point occurs at center of pattern as per Fig 2. Slightly retouch A11 for maximum amplitude and straightness of crossover lines.
7.	300Ω carbon res.	High side thru 300Ω resistor to left hand FM antenna terminal Low side to chassis.	106MC (400KC Sweep)	"	106MC	Vert.Amp. to Point (A) Low Side to chassis.	A16	Adjust for max. amplitude and symmetry. The exact setting is where the crossover point occurs at center of the pattern as per Fig 2.
8.	"	"	"	"	Tune for max. signal	"	A17, A18	Adjust for max. amplitude of pattern as per Fig 2.
9.	"	"	"	"	"	"	A14, A15	Retouch for maximum amplitude of pattern as per Fig 2.
10.	Check calibration at 90MC and 98MC. If calibration error is greater than 300KC, make the following adjustments. If pointer falls above 90MC, slightly expand the windings of the FM oscillator coil. Repeat steps 7 and 8. If it is impossible to obtain the 106MC signal at the proper point, adjust the spacing of the gang condenser plates. If the pointer falls below 90MC, slightly compress the FM Oscillator coil turns and repeat step 7 and 8. If necessary, bend the gang condenser plates. If the antenna and RF coils do not track properly, adjust the respestive coils and gang condenser plates in same manner as outlined above.							

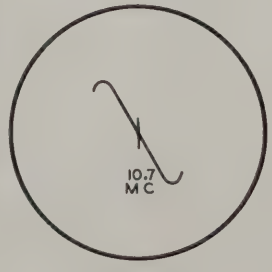
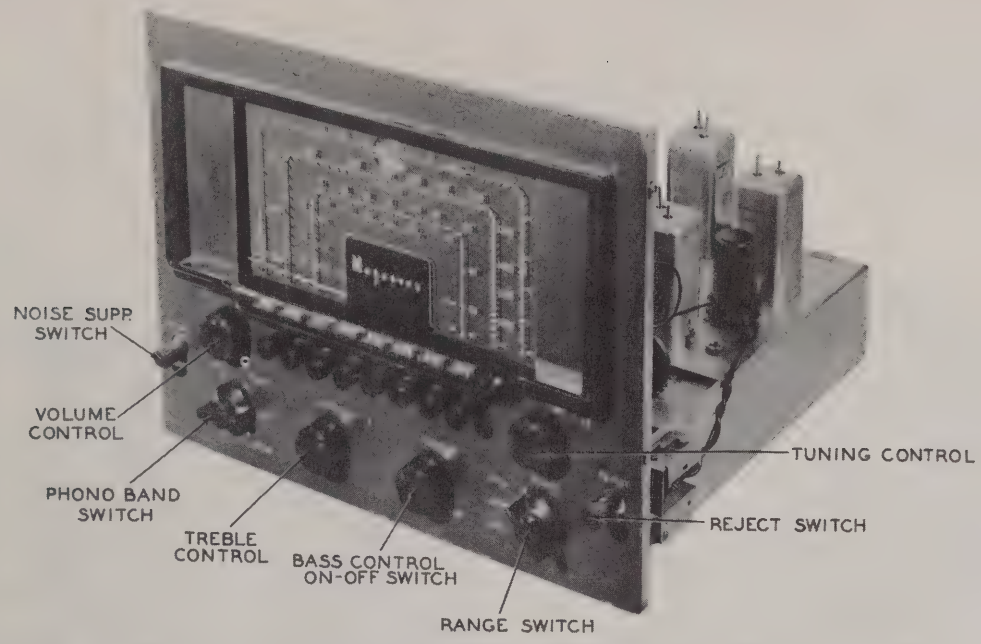


FIG. 2

MAGNAVOX CHASSIS AMP-111A,B,C, CR-211A,B

MAGNAVOX CHASSIS AMP-111A,B,C, CR-211A,B

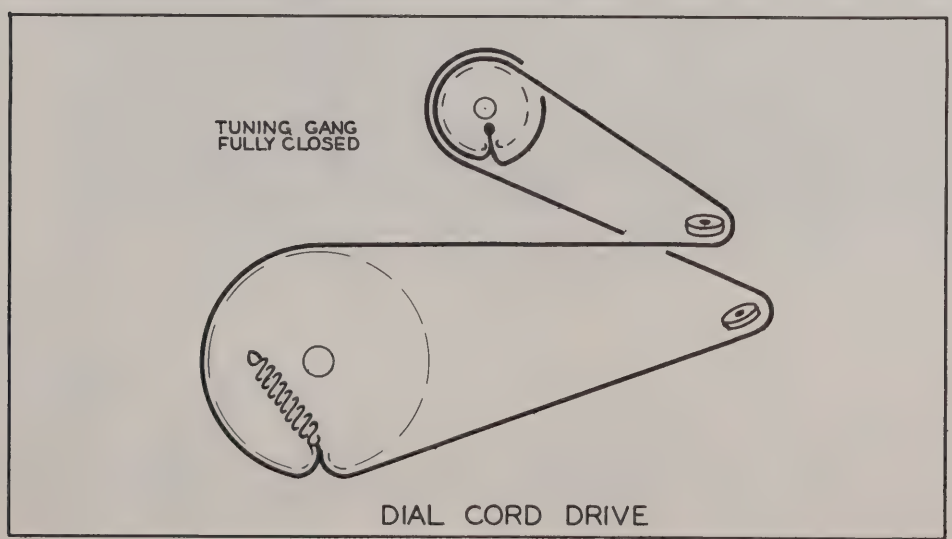


TRADE NAME	Magnavox, Chassis AMP-111A, B, C, CR-211A, B
MANUFACTURER	Magnavox Co., 2131 Bueter RD., Fort Wayne, Indiana
TYPE SET	AC Operated Audio Amplifier Chassis and 2 Band AM-FM Tuner Chassis
TUBES(NINETEEN)	Types 6BA6 RF Amp., 6SB7Y Converter, 6SG7 1st IF Amp., 6SG7 2nd IF Amp., 6SH7 Limiter, 6H6 Discriminator, 6SQ7 AM DET-Tuning Ind. Amp., 6J7 Phono Input, 6SQ7 AVC Amp.,-DET., 6SG7 Reactance Tube, 6U5 Tuning Indicator, 6J5 1st AF Amp., 6J5 2nd AF Amp., (4) 6L6G Power Output, (2) 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING: 2.4 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1620KC SHORT WAVE 5.9-17.3MC FREQ. MOD. 88-108MC

PUSHBUTTON ADJUSTMENT

This receiver employs a mechanical pushbutton system which actuates a muting switch while the pushbutton is depressed. Alignment of the pushbuttons are as follows:

1. Loosen pushbutton knob and tune in desired station manually.
2. Depress pushbutton as far as it will go and then tighten knob. Repeat to assure accurate setting.
3. Follow same procedure for all remaining pushbuttons.



DIAL CORD DRIVE

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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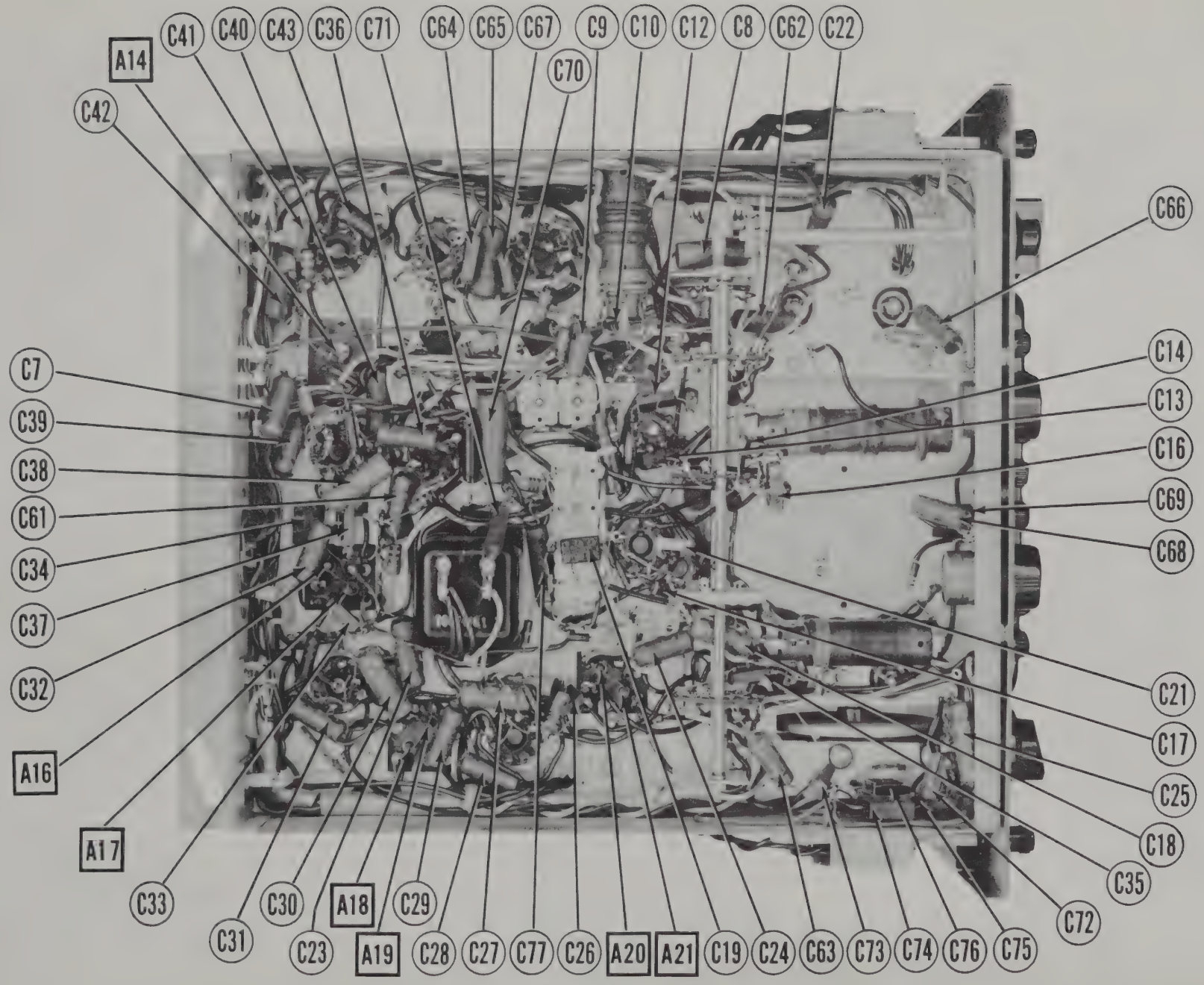
C41
C40
C43
C36
C71
C64
C65
C67
C9
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C42
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R24
R74
R23
R72
R25
R78
L18
R68
R79
R41
R15
R69
R13
R67
R27
R70
R28
R36
R35
R34
B
R44
R45
R6
R66
R43
R37
L8
L14
R5
R33
R32
R31
R42
R39
A
R30
C
R14
R12
R29

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAGNAVOX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6BA6	6BA6	7BK	
V2	Converter	6SB7Y	6SB7Y	8R	
V3	1st IF Amp.	6SG7	6SG7	8BK	
V4	2nd IF Amp.	6SG7	6SG7	8BK	
V5	Limiter	6SH7	6SH7	8BK	
V6	Disc.	6H6	6H6	7Q	
V7	Det.-Tuning Indicator Amp.	6SQ7	6SQ7	8Q	
V8	Phono Input	6J7	6J7	7R	
V9	AVC Amp.-Det.	6SQ7	6SQ7	8Q	
V10	Reactance Tube	6SG7	6SG7	8BK	
V11	Tuning Indicator	6U5	6U5	6R	
V12	1st AF Amp.	6J5	6J5	6Q	
V13	2nd AF Amp.	6J5	6J5	6Q	
V14	Power Output	6L6	6L6	7AC	
V15	Power Output	6L6	6L6	7AC	
V16	Power Output	6L6	6L6	7AC	
V17	Power Output	6L6	6L6	7AC	
V18	Rectifier	5U4G	5U4G	5T	
V19	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	475	27002302	AF222J§	UP3145		DY-3x15-450§	EL-344§	■ Filter
B	10	475							▲ Output Cath. Bypass
C2A	30	475	27002302	AF222J§	UP3145		DY-3x15-450§	EL-344§	■ Filter
B	10	475							▲ Filter
C3A	30	475	27002302	AF222J§	UP3145		DY-3x15-450§	EL-344§	■ Filter
B	10	475							▲ Filter
C4A	10	450	27002306	AF22J4A*	UP10450		DY-10-450	EL-202*	■ Decoupling
B	20	25					-25-50		▲ 2nd AF Cath. Bypass
C5A	10	450	27002306	AF22J4A*	UP10450		DY-10-450	EL-202*	■ Decoupling
B	20	25					-25-50		▲ 1st AF Cath. Bypass
C6	20	25	27002702	PRS25/25	BR252A		M-25-25	TA-25	Phono Input Cath. Byp.
C7	.01	400	25015202	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Ant. Coupling
C8	.05	200	25015201	P288-05	GT2S5		ST-4-05	TM-15	AVC Filter
C9	6200	500	25016102						Fixed Padder ± 5%
C10	10		25016403	1468-00001	5W5Q1	GP1K-10	MO.5-41	MS-41	RF Coupling
C11	50		25008803	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	RF Coupling
C12	100	500	25015903	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	RF Cath. Bypass
C13	.002	600	25015204	P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	RF Screen Bypass
C14	6		25016402	1468-000005	5W5V5	NP0K-5	MO.5-55	MS-55	RF Coupling
C15	35		25008804	1468-00004	5W5Q4	NP0K-33	MO.5-44	1FM-44	RF Coupling +
C16	6200	500	25016102						RF Coupling - 5%
C17	50		25008803	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Osc. Grid Cap
C18	.01	400	25015202	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Conv. Cath. Bypass
C19	335	500	25008503						Fixed Padder ± 1%
C20	3		25008803						Fixed Trimmer
C21	4000		25008803	1467-004	1D5D4		MW.5-24	1FM-24	Osc. Feedback
C22	.01	400	25015202	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Decoupling
C23	.02	400	25015202	P488-02	GT4S2		ST-4-02	TM-12	AVC Filter
C24	.01	400	25015202	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Conv. Plate Decoupling
C25	.02	400	25015202	P488-02	GT4S2		ST-4-02	TM-12	Voltage Divider
C26	470	500	25015903	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	IF Coupling
C27	.05	200	25015201	P288-05	GT2S5		ST-4-05	TM-15	1st IF Cath. Bypass
C28	.01	400	25015202	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	1st IF Screen Bypass
C29	.01	400	25015202	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	1st IF Plate Decoupling
C30	.05	200	25015201	P288-05	GT2S5		ST-4-05	TM-15	2nd IF Cath. Bypass
C31	.01	400	25015202	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	2nd IF Screen Bypass
C32	.01	400	25015202	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	2nd IF Plate Decoupling

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGNAVOX PART No.	IRC PART No.	IDENTIFICATION CODES	
R5	1 Meg.	½	23008403	BTS-1 Meg.	Ant. Shunt	
R6	1 Meg.	½	23008403	BTS-1 Meg.	FM Ant. Shunt	
R7	220KΩ	½	23008402	BTS-220K	RF Grid	
R8	20KΩ	1	23008501		RF Screen Bleeder	
R9	33KΩ	2	23008608	BT-2-33K	RF Screen Dropping	
R10	68Ω	½	23008406		RF Cathode	
R11	470KΩ	½	23008402	BTS-470K	RF Grid	
R12	4.7 Meg.	½	23008403	BTS-4.7 Meg	AVC Network	
R13	2.2 Meg.	½	23008403	BTS-2.2 Meg	AVC Network	
R14	1 Meg.	½	23008403	BTS-1 Meg.	AVC Network	
R15	1.5 Meg.	½	23008403	BTS-1.5 Meg	AVC Network	
R16	4700Ω	½	23008401	BTS-4700	BC RF Coil Shunt	
R17	220KΩ	½	23008402	BTS-220K	Conv. Grid	
R18	10KΩ	½	23008401	BTS-10K	FM Conv. Grid	
R19	100Ω	½	23008407		Parasitic Suppressor	
R20	15KΩ	½	23008402	BTS-15K	Osc. Grid	
R21	33Ω	½	23008404		Parasitic Suppressor	
R22	5600Ω	½	23008407	BTS-5600	Osc. Anode	
R23	470KΩ	½	23008402	BTS-470K	1st IF Grid	
R24	33Ω	½	23008404		1st IF Cathode	
R25	220Ω	½	23008409		1st IF Cathode	
R26	33KΩ	1	23008502	BTA-33K	1st IF Screen	
R27	68Ω	½	23008406		2nd IF Cathode	
R28	33KΩ	1	23008502	BTA-33K	2nd IF Screen	
R29	1000Ω	½	23008401	BTS-1000	2nd IF Decoupling	
R30	220KΩ	½	23008402	BTS-220K	Limiter Grid	
R31	470KΩ	½	23008402	BTS-470K	Limiter Cathode	
R32	8200Ω	1	23008502	BTA-8200	Limiter Screen Bleeder	
R33	8200Ω	1	23008502	BTA-8200	Limiter Screen Dropping	
R34	150KΩ	½	23008408	BTS-150K	Disc. Load	
R35	150KΩ	½	23008408	BTS-150K	Disc. Load	
R36	100KΩ	½	23008402	BTS-100K	Voltage Divider	
R37	68KΩ	½	23008404	BTS-68K	Voltage Divider	
R38	8500Ω	10	24003505	AB-8500	Voltage Dropping	
R39	2.2 Meg.	½	23008403	BTS-2.2 Meg.	Ind. Amp. Grid	
R40	220KΩ	½	23008402	BTS-220K	Diode Load	
R41	4.7 Meg.	½	23008403	BTS-4.7 Meg	AVC Network	
R42	1.5 Meg.	½	23008403	BTS-1.5 Meg	AVC Diode Load	
R43	100KΩ	½	23008402	BTS-100K	Ind. Amp. Plate	
R44	100KΩ	½	23008406	BTS-100K	De-emphasis	
R45	330KΩ	½	23008402	BTS-330K	Tone Compensation	
R46	150Ω	½	23008403		1st IF Grid	
R47	2.7 Meg.	½	23008403	BTS-2.7 Meg	Phono Pre. Amp. Grid	
R48A	1000Ω	½	23008401	BTS-1000	Phono Pre. Amp. Cathode	See Note 1
B	5600Ω	½	23008407	BTS-5600	Phono Pre. Amp. Cathode	See Note 2
R49A	47KΩ	½	23008402	BTS-47K	Phono Pre. Amp. Plate	See Note 1
B	330KΩ	½	23008402	BTS-330K	Phono Pre. Amp. Plate	See Note 2
R50	120KΩ	½	23008402	BTS-120K	Phono Pre. Amp. Screen	See Note 1
R51	100KΩ	½	23008402	BTS-100K	AVC Amp. Grid	
R52	3300Ω	½	23008401	BTS-3300	AVC Amp. Cathode	
R53	220KΩ	½	23008402	BTS-220K	AVC Amp. Plate	
R54	470KΩ	½	23008402	BTS-470K	Tone Compensation	
R55	1 Meg.	½	23008403	BTS-1 Meg.	AVC Det. Load	
R56	470KΩ	½	23008402	BTS-470K	AVC Filter	
R57	1 Meg.	½	23008403	BTS-1 Meg.	AVC Filter	
R58	100KΩ	½	23008406	BTS-100K	AVC Filter	
R59	8200Ω	½	23008473	BTS-8200	Voltage Divider	
R60	100KΩ	1	23008506	BTA-100K	Voltage Divider	
R61	470KΩ	½	23008402	BTS-470K	Reactance Tube Plate	
R62	330KΩ	½	23008402	BTS-330K	Tone Compensation	
R63	220KΩ	½	23008402	BTS-220K	Tone Compensation	
R64	22KΩ	½	23008402	BTS-22K	Tone Compensation	See Note 3
R65	39KΩ	½	23008402	BTS-39K	Tuning Ind. Target	
R66	470KΩ	½	23008402	BTS-470K	Tuning Ind. Plate	
R67	470KΩ	½	23008402	BTS-470K	1st AF Grid	See Note 4
R68	2200Ω	½	23008401	BTS-2200	1st AF Cathode	
R69	100KΩ	½	23008402	BTS-100K	1st AF Plate	
R70	220KΩ	½	23008402	BTS-220K	1st AF Plate Decoupling	
R71	5600Ω	½	23008407	BTS-5600	Tone Compensation	
R72	100KΩ	½	23008402	BTS-100K	Tone Compensation	
R73	47KΩ	½	23008402	BTS-47K	2nd AF Grid	
R74	100Ω	½	23008450	BW-½-100	Hum Balance	
R75	220Ω	½	23008454	BW-½-220	Hum Balance	

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C33	220	500	250159G100	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	IF Coupling
C34	220	500	250159G100	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	Diode Filter
C35	100	500	250159G98	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Filter
C36	.01	400	250152G27	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Tuning Ind. Filter
C37	47	500	250159G96	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Limiter Grid Filter
C38	.05	200	250152G15	P288-05	GT2S5		ST-4-05	TM-15	Limiter Cath. Bypass
C39	.01	400	250152G27	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Limiter Screen Bypass
C40	.01	400	250152G27	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Limiter Decoupling
C41	47	500	250159G96	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	RF Bypass
C42	1800	500	250160G67						De-emphasis ± 10%
C43	.002	600	250169G62	P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	Tone Compensation
C44	510	500	250159G64	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	Audio Coupling Note 1
C45	510	500	250159G64	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	Tone Comp. Note 1
C46	330	500	250159G101	1468-00035	5W5T3	GP2K-300	MO.5-33	1FM-335	Tone Compensation
C47	.1	400	250152G22	P488-1	GT4P1		ST-4-1	TM-1	Screen Bypass Note 2
C48	.05	200	250152G15	P288-05	GT2S5		ST-4-05	TM-15	Audio Coupling
C49	82	500	250159G81						Audio Coupling ± 10%
C50	6		25016462	1469-000005	5R5V5	NPOK-5	MOS.5-55	MS-55	Feedback - 1MMF ± 10%
C51	120	500	250159G83						Audio Coupling
C52	590		250088G41	1468-0005	1W5T6	GP2K-500	MO.5-36	MS-36	Diode Filter
C53	.1	200	250152G13	P288-1	GT2P1		ST-2-1	TM-1	AVC Amp. Cath. Byp.
C54	.005	400	250152G30	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Bias Filter
C55	.005	400	250152G30	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Bias Filter
C56	.003	600	25016906	P688-003	GT6D3	GP2M-003	ST-6-003	TM-23	Audio Coupling
C57	47	500	250159G96	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Feedback
C58	.01	200	250152G18	P488-01	GT2S1	GP2-335-01	ST-4-01	TM-11	React Tube Screen Byp.
C59	150	500	250159G84	1469-00015	5R5T15	NP0-334 -150	MOS.5-315	1FM-315	Tone Compensation ± 10%
C60	.001	600	250169G11	P688-001	GT6D1	GP2L-001	ST-6-001	TM-21	Audio Coupling
C61	.01	400	250152G27	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Tuning Ind. Filter
C62	.01	400	250152G27	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Tuning Ind. Filter
C63	.01	400	250152G27	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C64	330	500	250159G101	1468-00035	5W5T3	GP2K-300	MO.5-33	1FM-335	1st AF Plate Bypass
C65	.02	400	250152G26	P488-02	GT4S2		ST-4-02	TM-12	Audio Coupling
C66	.015	200	25016905	P288-015	GT6S15				Tone Compensation
C67	510	500	250159G64	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	Tone Compensation
C68	.01	400	250152G27	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Tone Compensation
C69	.005	400	250129G10	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Tone Compensation
C70	.1	400	250152G22	P488-1	GT4P1		ST-4-1	TM-1	Audio Coupling
C71	.003	600	250088G34	P688-003	GT6D3	GP2M-003	ST-6-003	TM-23	Tone Compensation
C72	1000	500	250160G82	1468-001	1W5D1	GP2L-001	MW.5-21	1FM-21	Tone Compensation
C73	470	500	250159G102	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	Tone Compensation
C74	.004	600	250129G7	P688-004	GT6D4		ST-6-004	TM-24	Tone Compensation
C75	.004	600	250129G7	P688-004	GT6D4		ST-6-004	TM-24	Tone Compensation
C76	.012	200	250129G13	P288-015	GT6S15	GP2L-015			Tone Compensation
C77	.005	600	250129G10	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Tone Comp. Note 2
C78	15	500	250159G93					MS-415	Fixed Trimmer
C79	15	500	250159G93					MS-415	Fixed Trimmer
C80	.03	400	250152G25	P488-03	GT4S3		ST-6-03	TM-13	Tone Comp. Note 2
C81	.01	600	250129G2	P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	Feedback
C82	.01	600	250129G2	P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	Feedback
C83	.005	600	250152G41	P688-005	GT6D5		ST-6-005	TM-25	Output Screen Bypass
C84	.02	600	250129G3	P688-02	GT6S2		MPH-6-02	TM-12	Line Filter
C85	.02	600	250129G3	P688-02	GT6S2		MPH-6-02	TM-12	Line Filter
C86	.02	600	250129G3	P688-02	GT6S2		MPH-6-02	TM-12	Motor Line Filter

Note 1. Not Used In Model CR211B.
Note 2. Not Used In Model CR211A.
$Parallel Sections To Obtain Desired Capacity.
*Omit One Section.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MAGNAVOX PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	1 Meg.	½	220044G24	Q13-137	M-63-Z	Volume control
R2	100KΩ	½	220072G12	Q13-128	M-51-Z	Treble control
R3A	1 Meg.	½	220076G6	Q13-137	M-63-Z	Bass control
B	Switch	Not Req.	76-1		SW-A	Attach to R3A per instructions
R4	500KΩ	½	220072G11	Q13-133	M-60-Z	Balance control

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MAGNAVOX PART No.	IRC PART No.	IDENTIFICATION CODES	
R76	470Ω	½	230084G11	BTS-470	AF Cathode	
R77	15KΩ	1	230085G20	BTA-15K	AF Plate	
R78	10KΩ	1	230085G19	BTA-10K	Filter	
R79	33KΩ	1	230085G22	BTA-33K	Tone Compensation	See Note 5
R80	22KΩ	½	230084G21	BTS-22K	Voltage Divider	
R81	100KΩ	½	230084G86	BTS-100K	Driver Trans. Shunt	
R82	3900Ω	½	230084G69	BTS-3900	Tone Compensation	See Note 6 and 7
R83	100KΩ	1	230085G25	BTA-100K	Output Grid	
R84	10KΩ	½	230084G19	BTS-10K	Output Grid	
R85	220Ω	½	230084G9		Parasitic Suppressor	
R86	100KΩ	1	230085G25	BTA-100K	Output Grid	
R87	10KΩ	½	230084G19	BTS-10K	Output Grid	
R88	220Ω	½	230084G9		Parasitic Suppressor	
R89A	80Ω	10	240039G1	AB-75	Output Cathode	
B	650Ω			AB-700	Filter	
C	900Ω			AB-900	Filter	
R90	1 Meg.	½	230084G31	BTS-1 Meg.	Tone Compensation	

Note 1. Used In Chassis CR211B.
Note 2. Used In Chassis CR211A.
Note 3. Chassis CR211A Uses 68KΩ Resistor In This Application.
Note 4. Model CR211A Uses 220KΩ Resistor In This Application.
Note 5. Used In Chassis CR211B Only.
Note 6. Used In Amp. 111B Only.
Note 7. Models Amp. 111C. Use 6800Ω In This Application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA MAGNAVOX PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	117VAC @ 2.4A	740VCT .310A DC	5VAC @ 6A	6.0VAC @ 4.4A	300042G1			P-3161†
		SEC. 4						
		6.4VAC @ 1.0A						

†Drill New Mounting Holes.

TRANSFORMER (DRIVER)

ITEM No.	RATING TURNS RATIO	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA MAGNAVOX PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
T2	PRI. TO SEC. 1 2 TO 1	2000Ω	SEC. 1 2900Ω	320021G1				
	PRI. TO SEC. 2 2 TO 1		SEC. 2 2900Ω					

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA MAGNAVOX PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
T3	3800Ω CT	15Ω 7.5Ω 1.5Ω	105Ω CT	.9Ω .6Ω .3Ω	330028G1			A-3133	

SPEAKER*

ITEM No.	RATINGS		REPLACEMENT DATA MAGNAVOX PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V.C. IMP.		ST-654		
SP1	PM	16Ω	582999	MOD.P15-N		
SP2	142Ω	26Ω	580006			
	CONE DIA.	V.C. DIA.				
SP3	14-1/4"	1-1/2"				

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MAGNAVOX PART No.	REPLACEMENT DATA MEISSNER PART No.	
L1	Loop Ant.	1.2Ω		460637G1		
L2	SW Ant.	0Ω				
L3A	SW Ant.Coil	.5Ω	.2Ω	360299G1		
B	AM Ant.Coil	23Ω	3.5Ω			
L4	FM Ant.Coil	0Ω		360296G3		
L5A	SW RF Coil	5.5Ω	.2Ω	360300G1		
B	AM RF Coil	27Ω	3.5Ω			
L6	RF Choke	.5Ω		360284G1		
L7	FM RF Coil	0Ω		360297G4		
L8	Fil. Choke	.5Ω		360264G1		
L9A	SW Osc.Coil	.3Ω		360298G1		
B	AM Osc.Coil	.8Ω	5.5Ω			
L10	FM Osc.Coil	0Ω		360295G1		
L11A	FM 1st IF		.2Ω	360285G1		
B	AM 1st IF	♦2Ω	1Ω			♦Includes FM Primary Winding
L12A	FM 2nd IF			360285G1		
B	AM 2nd IF	‡2Ω	‡2Ω			‡Includes FM Primary And Secondary Winding
L13A	FM 3rd IF	1.2Ω	1.2Ω	360286G1		
B	AM 3rd IF	1.5Ω	1.5Ω			
L14	RF Choke	.5Ω		360284G1		
L15	FM Disc. Transformer	.5Ω	1Ω	360305G1		
L16	RF Choke	.1Ω				
L17	RF Choke	.1Ω				

TONE CHOKE

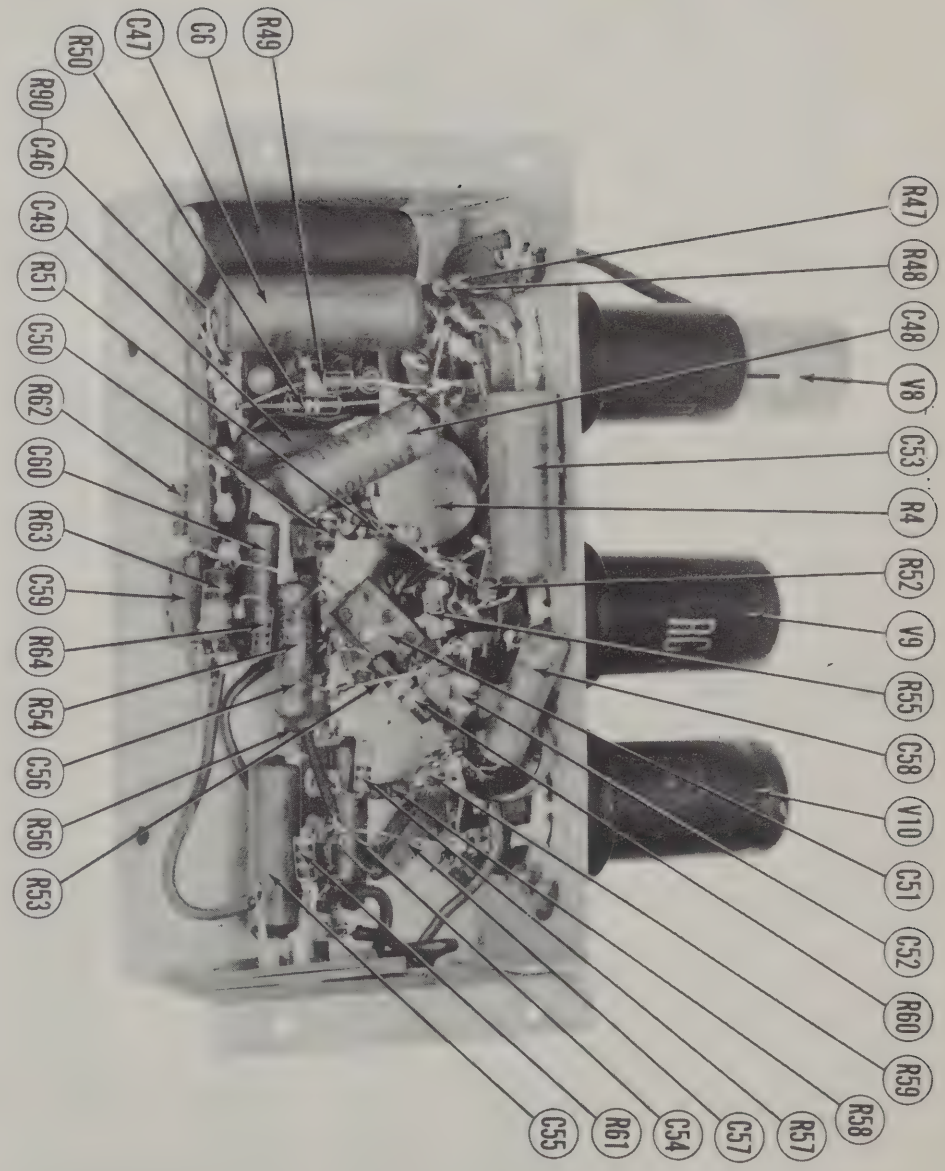
ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∽)	REPLACEMENT DATA MAGNAVOX PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA CHICAGO PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
L18		250Ω		360244G1				

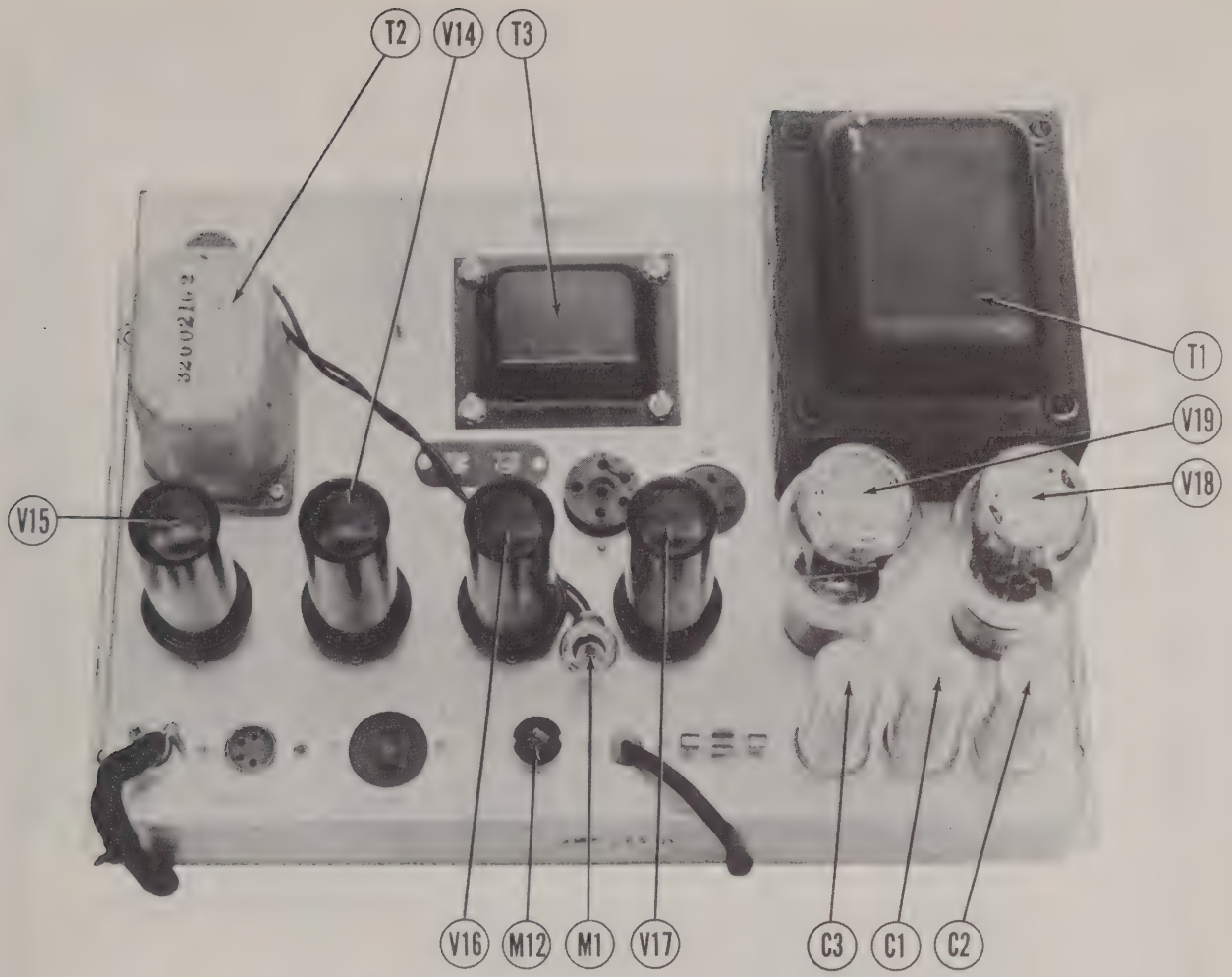
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA MAGNAVOX PART No.	REPLACEMENT DATA	NOTES
M1 Thru M5	Bayonet	6-8V	0.25A	Blue			Type #44

MISCELLANEOUS

ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M6	Switch	160179G1	Band
M7	Switch		Range
M8	Switch	160188G1	Reject
M9	Switch	160187G1	Noise Suppressor
M10	Switch	160176G1	Ant. Selector
M11	Filter Assembly	350041G1	
M12	Fuse		3 Amp.
M13	3 Gang Var. Cap.	26007SG1	(12-504MMF, 12-504MMF, 12-362MMF)
A7	Trimmer	26006TG4	BC Osc. Adj.
A8			BC RF Adj.
A10	Trimmer Strip	26008ZG1	BC Osc. Adj. (Padder)
A11			SW Osc. Adj.
A12			SW RF Adj.
A9	Dual Trimmer	26008OG1	BC Ant. Adj.
A13			SW Ant. Adj.
A22			FM Osc. Adj.
A23	Trimmer Strip	26008AG1	FM RF Adj.
A24			FM Ant. Adj.
	Dial Glass	150303G1	

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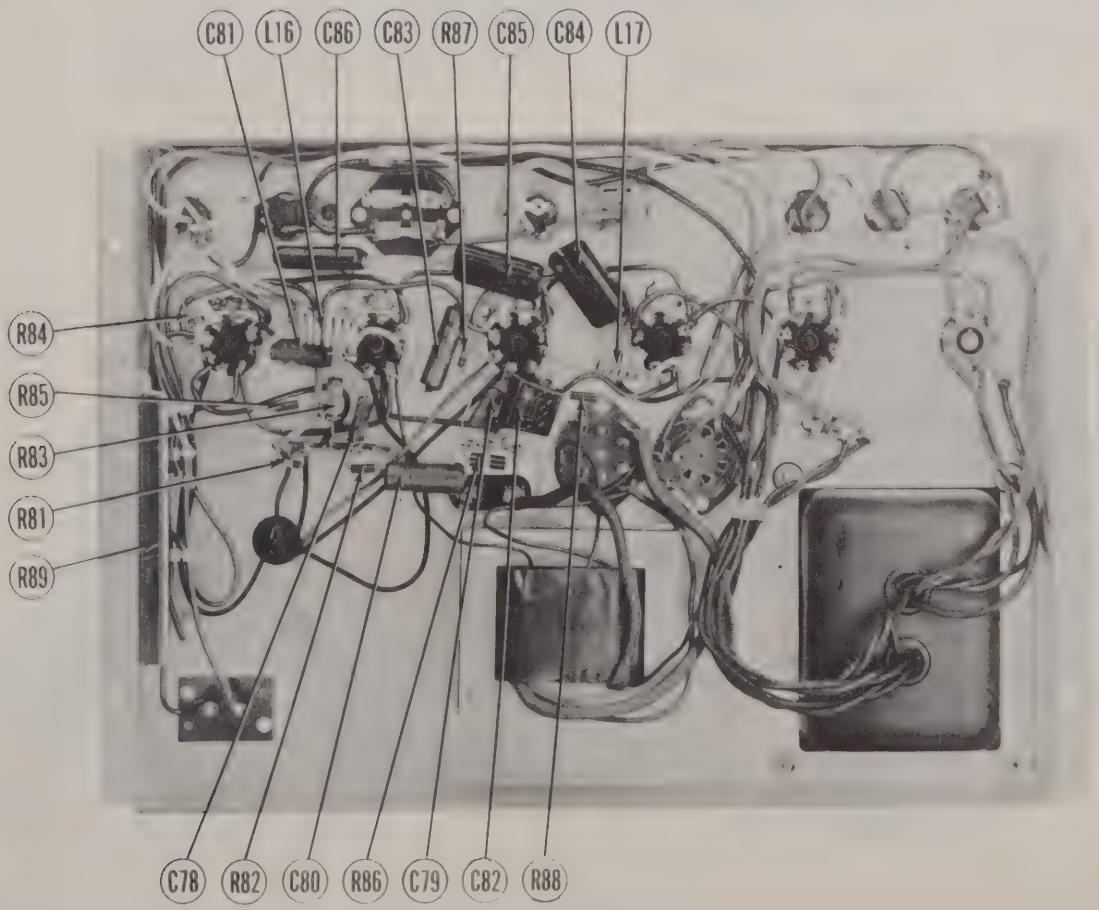
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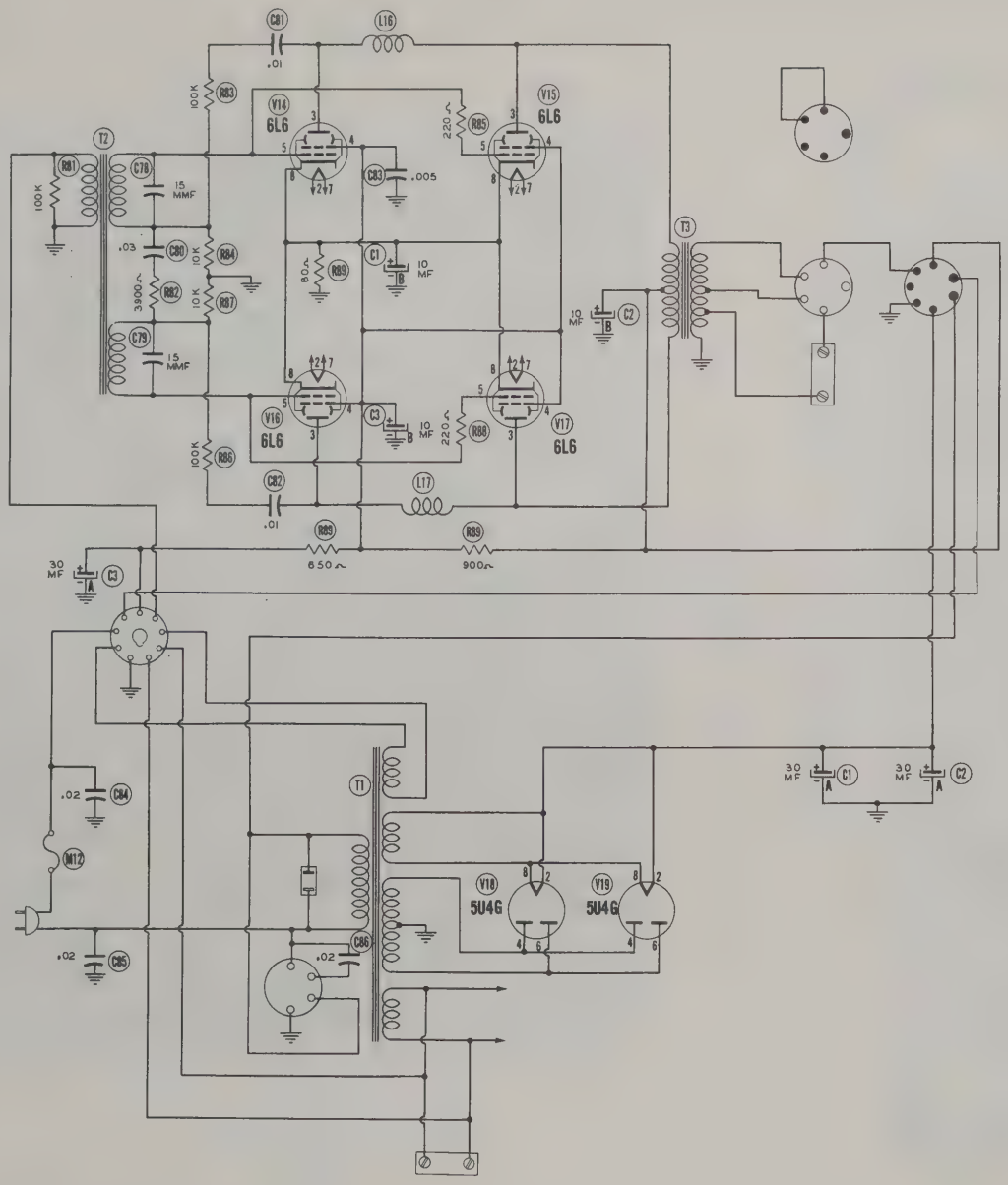

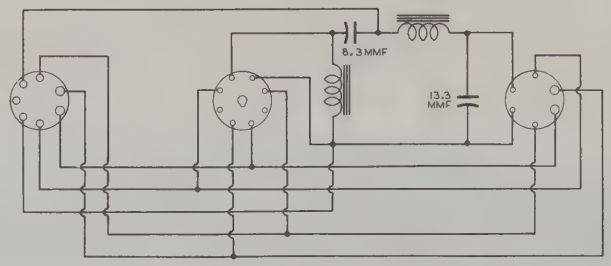

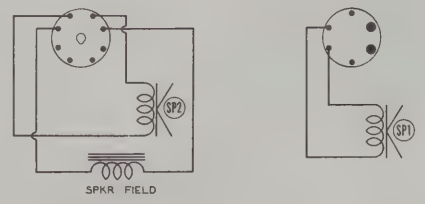

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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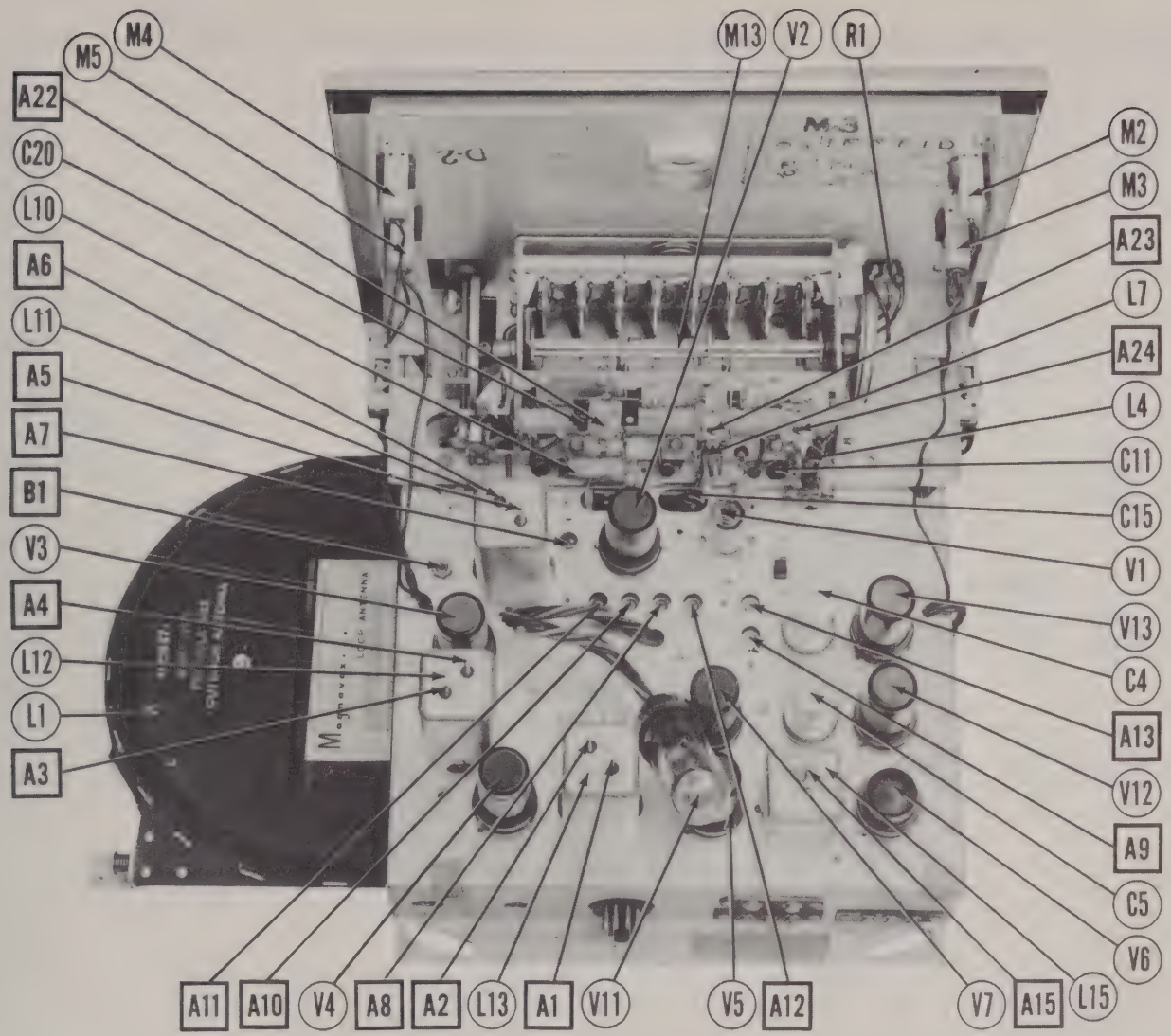
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A22
C20
L10
A6
L11
A5
A7
B1
V3
A4
L12
L1
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V2
R1
M2
M3
A23
L7
A24
L4
C11
C15
V1
V13
C4
A13
V12
A9
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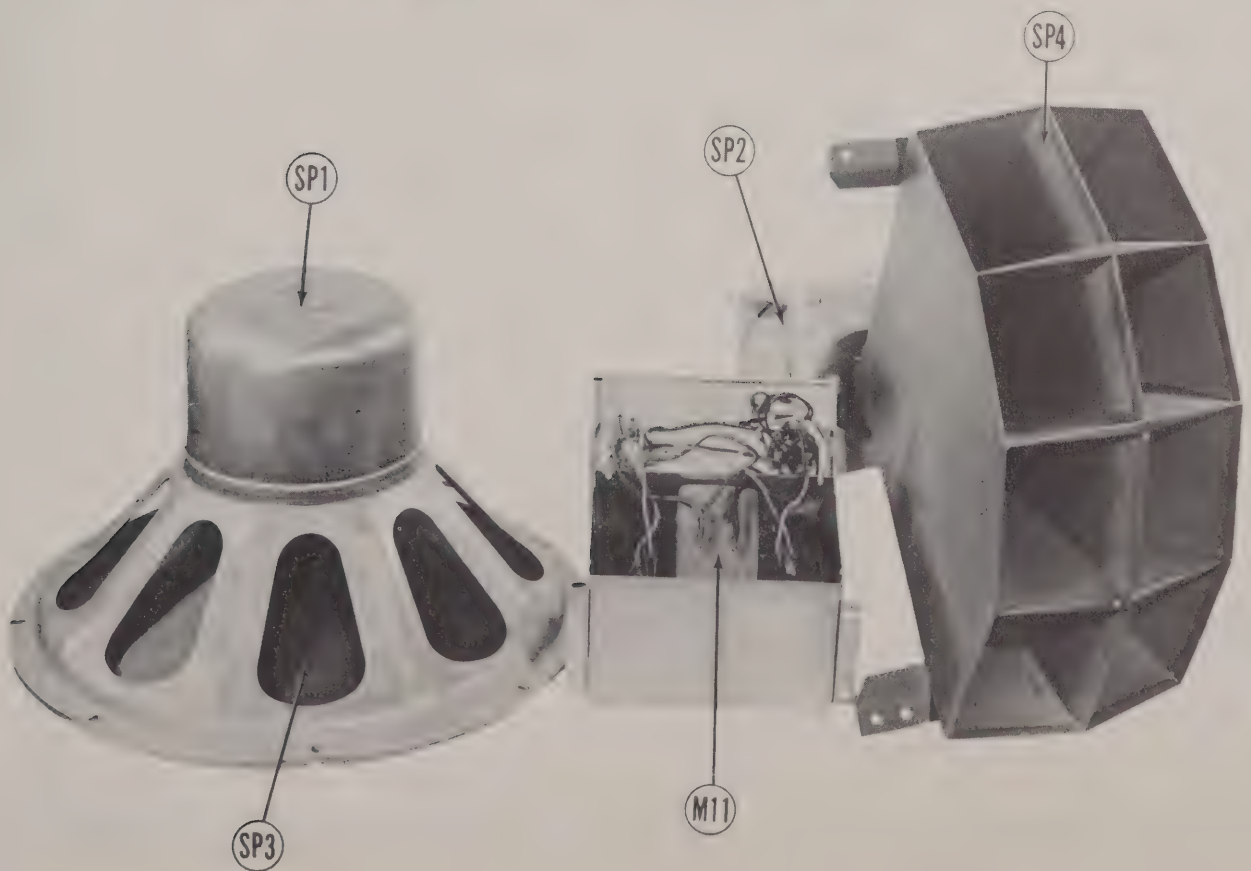
A11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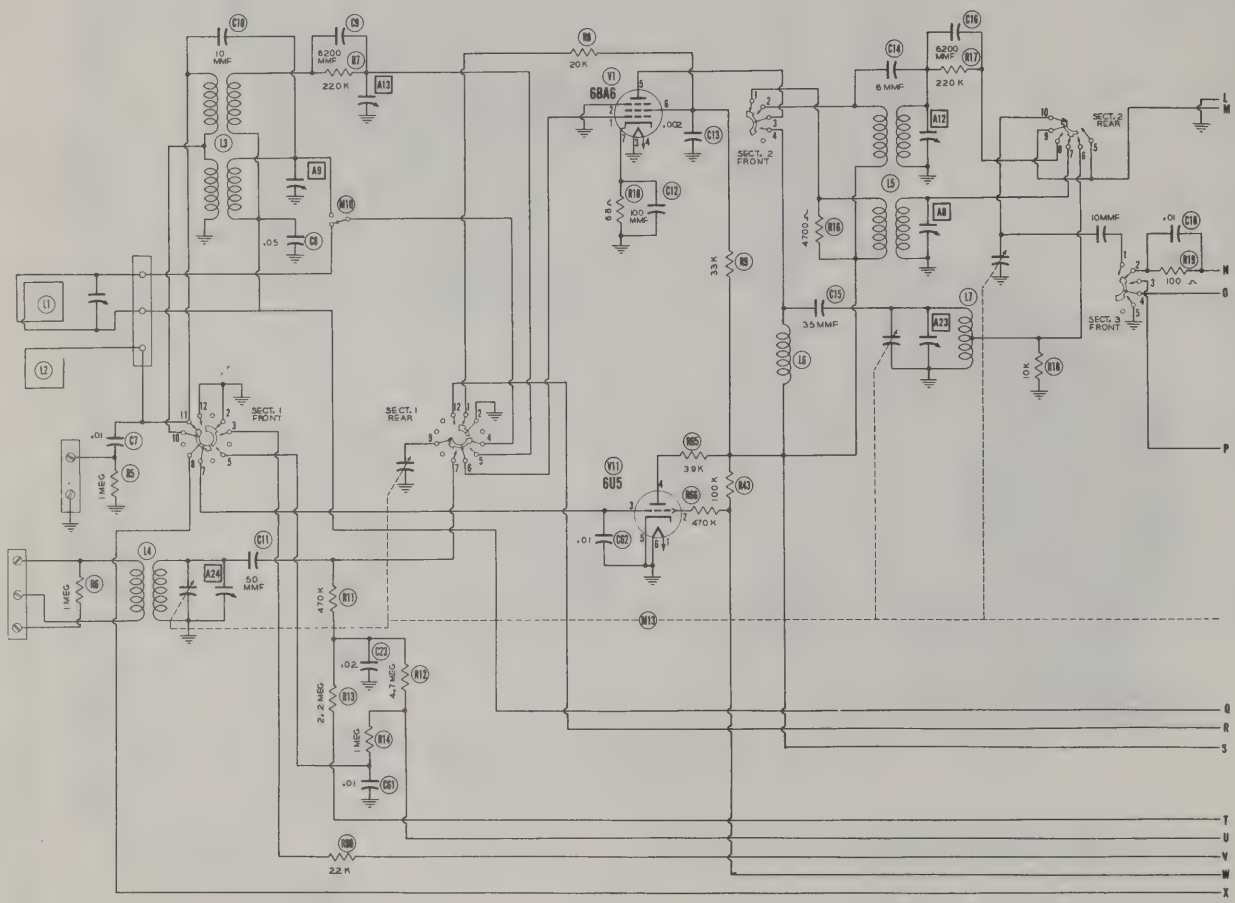
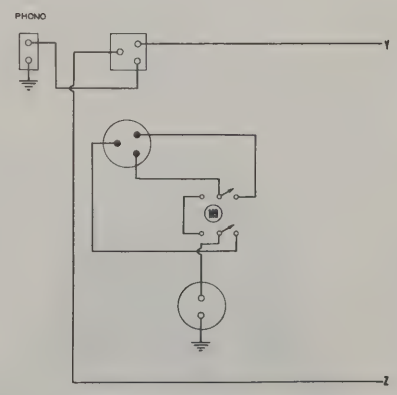
SP1
M11
SP3





IF=455 KC AM

IF=10.7 MC FM

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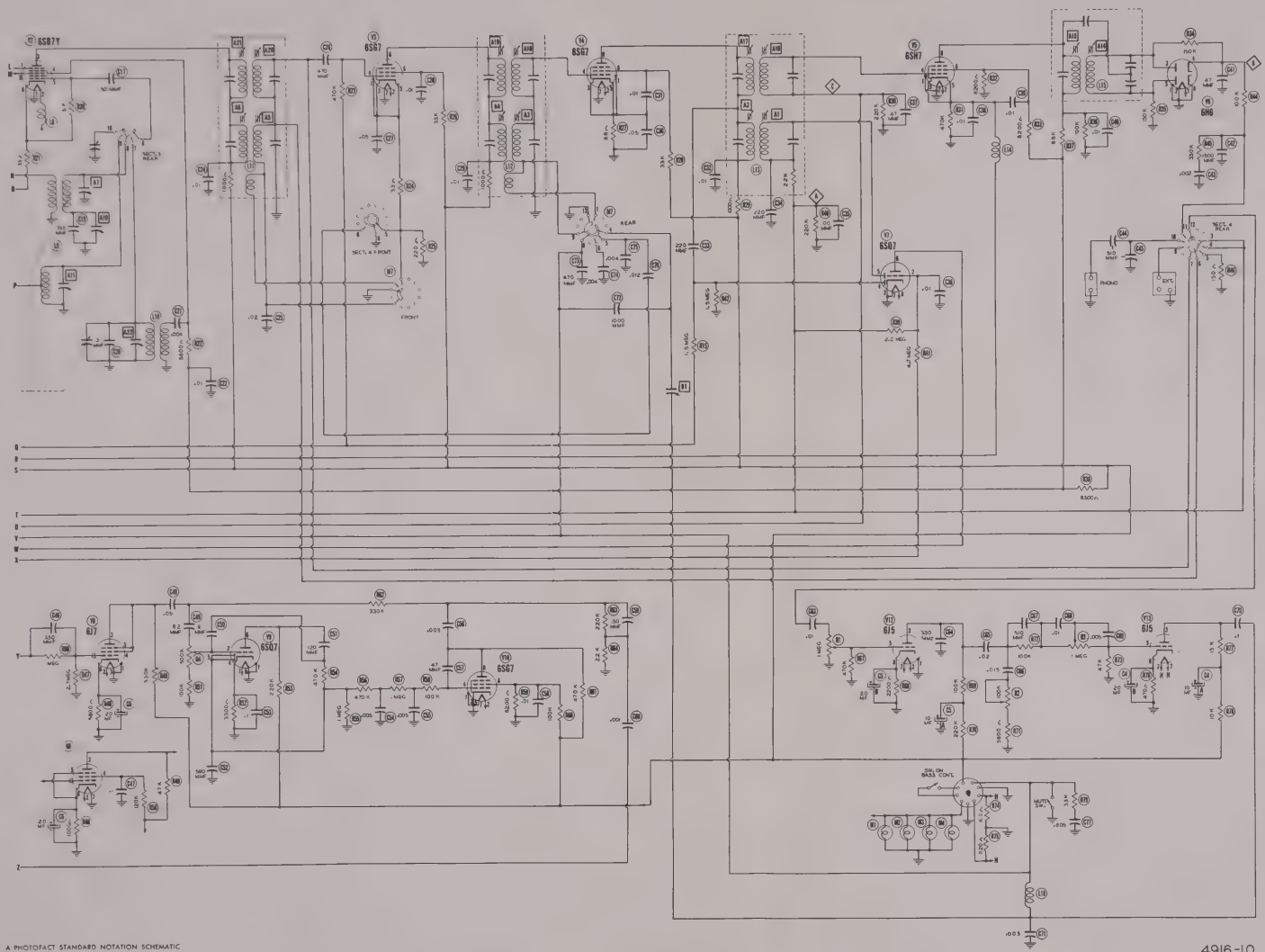

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4916-10

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	-.2VDC	0V	0V	6.3VAC	240VDC	60VDC	.4VDC		
V 2	6SB7Y	0V	6.3VAC	240VDC	65VDC	§-3.2 VDC	1VDC	0V	0V	
V 3	6SG7	.4VDC	6.3VAC	.4VDC	-.2VDC	.4VDC	120VDC	0V	235VDC	
V 4	6SG7	.8VDC	6.3VAC	.8VDC	0V	.8VDC	120VDC	0V	235VDC	
‡V5	6SH7	0V	6.3VAC	0V	-.4VDC	0V	45VDC	0V	6VDC	
‡V6	6H6	0V	0V	-.2VDC	.1VDC	-.2VDC	0V	6.3VAC	0V	
V 7	6SQ7	0V	-.3VDC	0V	-.3VDC	-.3VDC	130VDC	0V	6.3VAC	
V 8	6J7	0V	6.3VAC	100VDC	135VDC	3.2VDC	0V	0V	3.2VDC	0V
V 9	6SQ7	0V	0V	1.2VDC	-.1VDC	-.1VDC	150VDC	6.3VAC	0V	
V 10	6SG7	0V	0V	0V	-.5VDC	0V	16VDC	6.3VAC	130VDC	
V 11	6U5	6.3VAC	29VDC	-.1VDC	180VDC	0V	0V			
V 12	6J5	0V	3.8VAC	35VDC	-.3VDC	0V	-.1VDC	2.2VAC	1.2VDC	
V 13	6J5	0V	3.8VAC	112VDC	0V	0V	0V	2.2VAC	2.8VDC	
V 14	6L6	0V	3.8VAC	340VDC	280VDC	0V	0V	2.2VAC	20VDC	
V 15	6L6	0V	3.8VAC	340VDC	280VDC	0V	0V	2.2VAC	20VDC	
V 16	6L6	0V	3.8VAC	340VDC	230VDC	0V	0V	2.2VAC	20VDC	
V 17	6L6	0V	3.8VAC	340VDC	280VDC	0V	0V	2.2VAC	20VDC	
V 18	5U4G	0V	400VDC	0V	360VAC	0V	360VAC	0V	400VDC	
V 19	5U4G	0V	400VDC	0V	360VAC	0V	360VAC	0V	400VDC	

§TAKEN WITH VACUUM TUBE VOLTMETER.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	
V 1	6BA6	3 Meg.	0Ω	0Ω	.2Ω	*1800Ω	*20KΩ	68Ω		
V 2	6SB7Y	0Ω	.2Ω	*2KΩ	*14KΩ	15KΩ	130Ω	0Ω	3.5Ω	
V 3	6SG7	30Ω	.2Ω	30Ω	3.4 Meg	30Ω	*35KΩ	0Ω	*2.7KΩ	
V 4	6SG7	68Ω	.2Ω	68Ω	2Ω	68Ω	*40KΩ	0Ω	*2.7KΩ	
‡V5	6SH7	0Ω	.2Ω	.5Ω	180KΩ	.5Ω	*15KΩ	0Ω	*50KΩ	
‡V6	6H6	0Ω	0Ω	150KΩ	300KΩ	150KΩ	800KΩ	.2Ω	0Ω	
V 7	6SQ7	0Ω	2.2 Meg	0Ω	1.5 Meg	220KΩ	*100KΩ	0Ω	.2Ω	
V 8	6J7	0Ω	.2Ω	*55KΩ	*120KΩ	1000Ω	2.7 Meg.	0Ω	1000Ω	
V 9	6SQ7	0Ω	500KΩ	3.3KΩ	1 Meg.	1 Meg.	*200KΩ	0Ω	.2Ω	
V 10	6SG7	0Ω	0Ω	0Ω	1.7 Meg	0Ω	*22KΩ	.2Ω	*470KΩ	
V 11	6U5	.2Ω	*600KΩ	6 Meg.	*40KΩ	0Ω	0Ω			
V 12	6J5	0Ω	70Ω	*300KΩ	2.5 Meg	300KΩ	6 Meg.	70Ω	2.2KΩ	
V 13	6J5	0Ω	70Ω	*27KΩ	1 Meg.	1 Meg.	1.2 Meg.	70Ω	570Ω	
V 14	6L6	0Ω	70Ω	*200Ω	*1000Ω	15KΩ	120KΩ	70Ω	80Ω	
V 15	6L6	0Ω	70Ω	*200Ω	*1000Ω	15KΩ	10KΩ	70Ω	80Ω	
V 16	6L6	0Ω	70Ω	*200Ω	*1000Ω	12KΩ	10KΩ	70Ω	80Ω	
V 17	6L6	0Ω	70Ω	*200Ω	*1000Ω	12KΩ	Inf.	70Ω	80Ω	
V 18	5U4G	Inf.	20KΩ	Inf.	27Ω	Inf.	27Ω	Inf.	20KΩ	
V 19	5U4G	Inf.	20KΩ	Inf.	27Ω	Inf.	27Ω	Inf.	20KΩ	

*Measured From Pin 2 Of V19.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AM IF ALIGNMENT USING AM SIGNAL GENERATOR AND OUTPUT METER

To set pointer turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial.
Preset the range control to position #1.
Volume control should be set at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 8 (Grid) of 6SB7Y (V2). Low side to chassis.	455KC	BC	1000KC	Across voice coil of 15 inch speaker.	A1,A2, A3,A4, A5,A6	Adjust for max. output.

AM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the sweep generator to the horizontal amplifier of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to pin 8 (Grid) of 6SB7Y (V2). Low side to chassis.	455KC (40KC Sweep)	BC	1000KC	Vert.Amp. thru 1 Meg. to point (A) Low side to chassis.	A1,A2, A3,A4, A5,A6	Adjust A1 thru A6 for best possible peak with range switch in position #1 and symmetry in position #4. See Fig 1.

BROADCAST BAND ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
2.	250MMF	High side to ext. AM antenna terminal. Low side to chassis. "Ant.-Loop" switch in "Ant." position.	1400KC	BC	1400KC	Across voice coil of 15 inch speaker	A7,A8, A9	Adjust for max. output.
3.	250MMF	"	600KC	"	600KC	"	A10	Rock tuning cap and adjust for max. output.
4.	250MMF	"	1400KC	"	1400KC	"	A7	If necessary re-peak A7.

SHORT WAVE ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
5.	400Ω carbon res.	High side thru 400Ω resistor to SW antenna terminal. Low side to chassis.	15MC	SW	15MC	Across voice coil of 15 inch speaker.	A11	Screw A11 all way in to max. capacity. Back out to first peak and adjust for max. output. Check for image at 15.91MC. If not, A11 is adjusted at wrong peak.
6.	400Ω carbon res.	"	"	"	"	"	A12, A13	Adjust for max. output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to pin 4 (Grid) of 6SH7 (V5). Low side to chassis.	10.775MC (Very Accurately)	FM	Point of non interference	DC Probe thru 1 Meg. to Point (B) Common to chassis.	A14, A15	Adjust for maximum deflection.
8.	.01MFD	"	10.7MC (Very Accurately)	"	"	"	A14	Adjust for exact zero reading. A positive and negative reading will be obtained on either side of the correct setting.
9.	.01MFD & 1000Ω carbon res.	High side thru .01 in series with 1000Ω to pin 4 (Grid) of 6SG7 (V4). Low side to chassis.	10.7MC	"	Tuning gang fully closed	DC Probe thru 1 Meg. to Point (C) Common to chassis.	A16, A17	Adjust for maximum deflection.
10.	"	High side to pin 4 (Grid) of 6SG7 (V3). Low side to chassis.	"	"	"	"	A18, A19	"
11.	"	High side to pin 8 (Grid) of 6SB7Y (V2). Low side to chassis.	"	"	"	"	A20, A21	Adjust for maximum deflection. After each stage has been individually aligned, do not repeak with signal fed in at grid of 6SB7Y (V2).

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60\ modulation and 450KC sweep. Use 120\ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD & 1000Ω carbon res.	High side thru .01MFD in series with 1000Ω res. to pin 4 (Grid) of 6SG7 (V4). Low side to chassis.	10.7MC (450KC Sweep)	FM	Tuning gang fully closed	Vert.Amp. thru 1 Meg. to Point (C) Low side to chassis.	A16, A17	Adjust for max. amplitude and symmetry as per Fig 2
8.	"	High side to pin 4 (Grid) of 6SG7 (V3). Low side to chassis.	"	"	"	"	A18, A19	"
9.	"	High side to pin 8 (Grid) of 6SB7Y (V2). Low side to chassis.	"	"	"	"	A20, A21	"
10.	"	"	"	"	"	Vert.Amp. thru 1 Meg. to Point (B) Low side to chassis.	A14, A15	Adjust A15 for max. amp. & straightness of crossover lines as per Fig 3. Adjust A14 so crossover Point occurs at center of pattern. Repeat adjustments to assure accurate alignment of the discriminator transformer. Continue with step 12.

FM RF ALIGNMENT

Ground one side of the FM antenna terminals to ground.
Attenuate signal generator to give approximately a 3 volt reading on the VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
12.	300Ω carbon res.	High side thru 300Ω resistor to ungrounded FM antenna terminal. Low side to grounded FM ant. terminal.	107MC	FM	107MC	DC Probe thru 1 Meg. to Point (C) Common to chassis.	A22	Adjust for max. deflection.
13.	"	"	"	"	"	"	A23, A24	Rock tuning gang and adjust for maximum deflection.

PHONO NOISE SUPPRESSOR ADJUSTMENT

There are two methods of adjusting the phono noise suppressor circuit. Method #1 is the preferred method, however method #2 may be used if certain equipment is not available.

1. Turn receiver to "phono" position and play Columbia Test record #10004 which will give a 1500 cycle note. Connect VTVM to pins 4 or 5 of 6SQ7 (V9) to ground and adjust the bias gain control to -4 volts.

2. Turn range and tone control to extreme clockwise position and the bias gain control to extreme counter-clockwise position. Place pickup stylus in the outside groove of a 12 inch record having a moderate amount of surface noise and turn the bias gain control clockwise to the point where the surface noise is barely audible. In making this adjustment do not permit the stylus to run into the recorded portion of the record.

10KC FILTER ADJUSTMENT

Turn the range switch to the #3 position and feed in a 10KC note at the phono receptacle (noise suppressor off). Set the function switch to the "phono" position and adjust the 10KC trimmer (B1) for minimum output.

If an audio generator is not available, tune the receiver between two adjacent channel stations having approximately the same power. If the 10KC filter trimmer is out of adjustment, a whistle will be heard. Adjust B1 until whistle is eliminated.

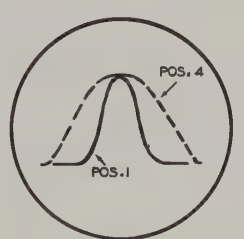


FIG. 1

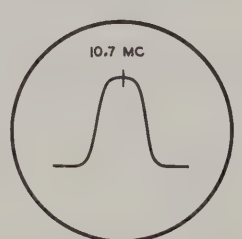


FIG. 2

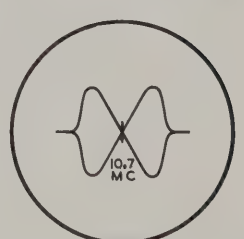
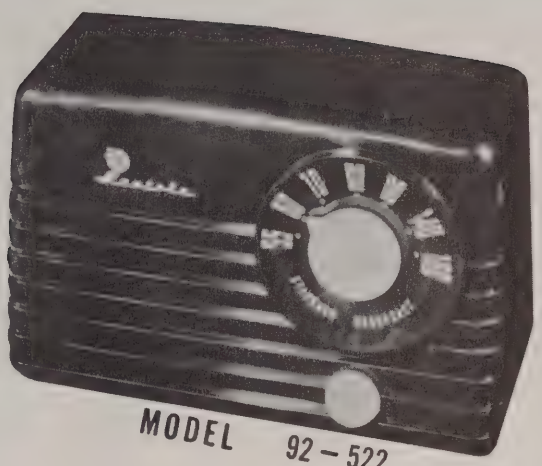


FIG. 3

MANTOLA MODELS
92-520, 92-521, 92-522

MODEL 92-521



MODEL 92-522

MANTOLA MODELS
92-520, 92-521, 92-522

TRADE NAME	Mantola, Models 92-520, 92-521, 92-522
SUPPLIER	B. F. Goodrich, 500 S. Main, Akron, Ohio.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna.
TUBES (FOUR)	Types 12BE6 Converter, 12AT6 DET-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	532.5-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to rear stator of tuning gang. Low side to B-.	455KC	Tuning gang fully open.	Across voice coil.	A1, A2	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation.
2.	.1MFD	"	1620KC	"	"	A3	Adjust for maximum output.
3.	75MMF	High side to antenna hank. Low side to chassis.	1400KC	Tune for max signal.	"	A4	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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DATE 8/49 4916-11 SET #68 FOLDER #11

PARTS LIST AND DESCRIPTIONS

MANTOLA
MODEL 92-521

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MANTOLA PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	DET-AVC-AF	12AT6	12AT6	7BT	
V3	Power Output	50B5	50B5	7BZ	
V4	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MANTOLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	
C1A	40	150	CE-15	PRSA150/40	EDL		DSB-2x40	TA-440	Filter Red
B	40	150		-40	4415		-150		Filter Green
C2	510	500	CM501-1	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	RF Coupling
C3	10			1468-00001	5W5Q1	GP1K-10	MO.5-41	MS-41	RF Coupling Note
C4	.05	400	CP503-1	P488-05	GT4S5		ST-4-05	TM-15	AVC Filter
C5	100	500	CM101-1	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode RF Filter
C6	.002	400	CP202-2	P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	Audio Coupling
C7	.005	400	CP502-3	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C8	.02	400	CP203-1	P488-02	GT4S2		ST-4-02	TM-12	Output Plate Bypass
C9	.02	400	CP203-1	P488-02	GT4S2		ST-4-02	TM-12	Rect. Plate Bypass
C10	.05	400	CP503-1	P488-05	GT4S5		ST-4-05	72P1	Line Isolation

Note. Not Used In All Models.

CONTROLS

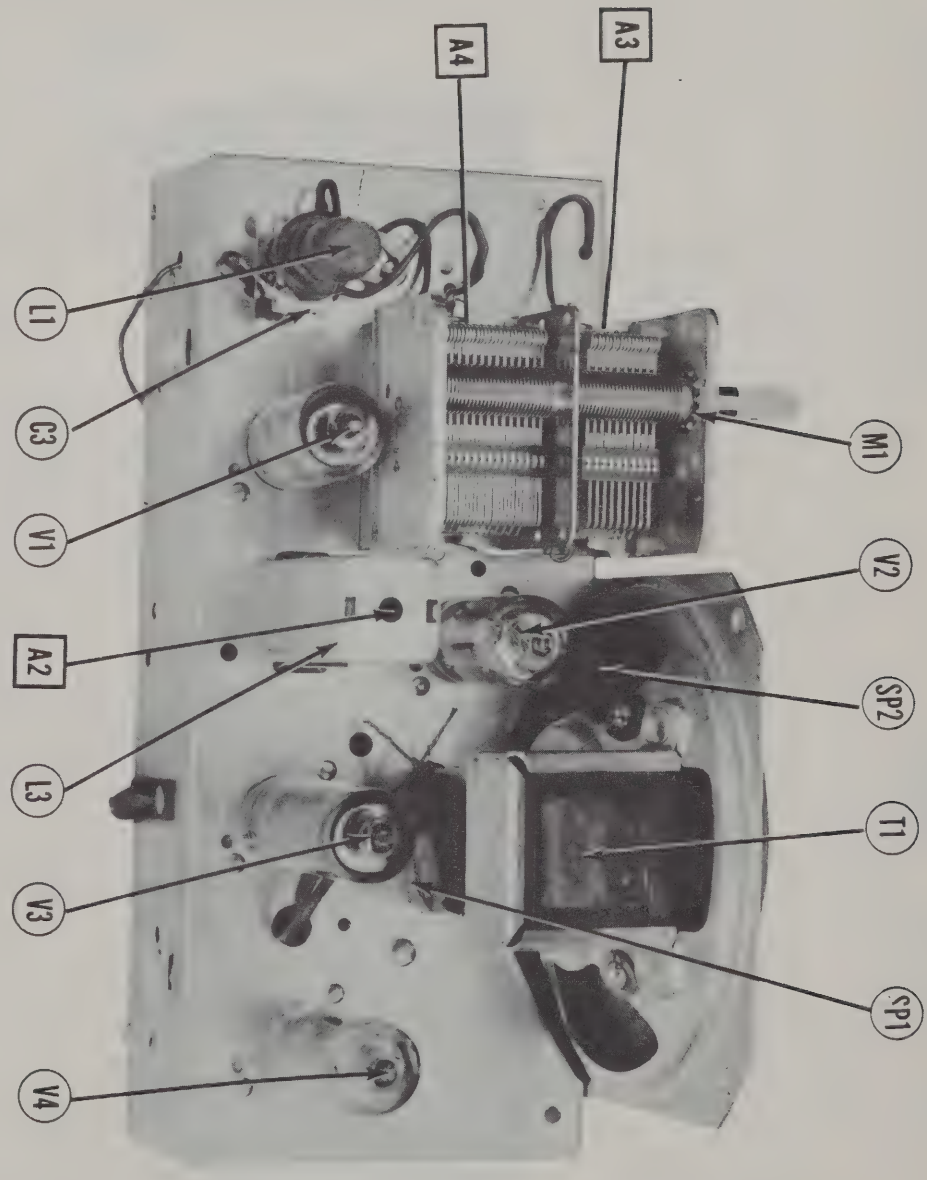
ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	MANTOLA PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	2 Meg.	½	VC-11	Q13-139#	M-66-Z#	Volume control
B	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions

#Install A 100KΩ Resistor In Series With The Right Hand Terminal Of The Control And The Lead Connecting To The Same Terminal Of The Original Control. (Controls Viewed From Shaft End, Terminals Down).

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MANTOLA PART No.	IRC PART No.	
R2	18KΩ	½	RC183-2	BTS-18K	Conv. Grid
R3	18KΩ	½	RC183-2	BTS-18K	Osc. Grid
R4	4.7 Meg.	½	RC475-1	BTS-4.7 Meg	AVC Network
R5	10 Meg.	½	RC106-1	BTS-10 Meg.	AF Grid
R6	220KΩ	½	RC224-1	BTS-220K	AF Plate
R7	220KΩ	½	RC224-1	BTS-220K	AVC Network
R8	330KΩ	½	RC334-1	BTS-330K	Output Grid
R9	2200Ω	1	RC222-5	BW-1-2200	Filter
R10	39Ω	1	RW390-5	BW-1-39	Filament Dropping (Wire Wound)
R11	18Ω	½	RC180-2		Rect. Ballast

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MANTOLA PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	3000Ω	3.2Ω	230Ω	.7Ω	Part Of SP-47-10A	A-3876‡	RO-2‡	A-3025	‡Mount On Chassis.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MANTOLA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD	V.C. IMP.	SP-47-10A	ST-113† MOD.P4-X	4A07	†Cut out chassis to fit speaker magnet frame. Remount output transformer.
	PM	3.2Ω				
SP2	CONE DIA.	V.C. DIA.				
	3-7/8"	9/16"				

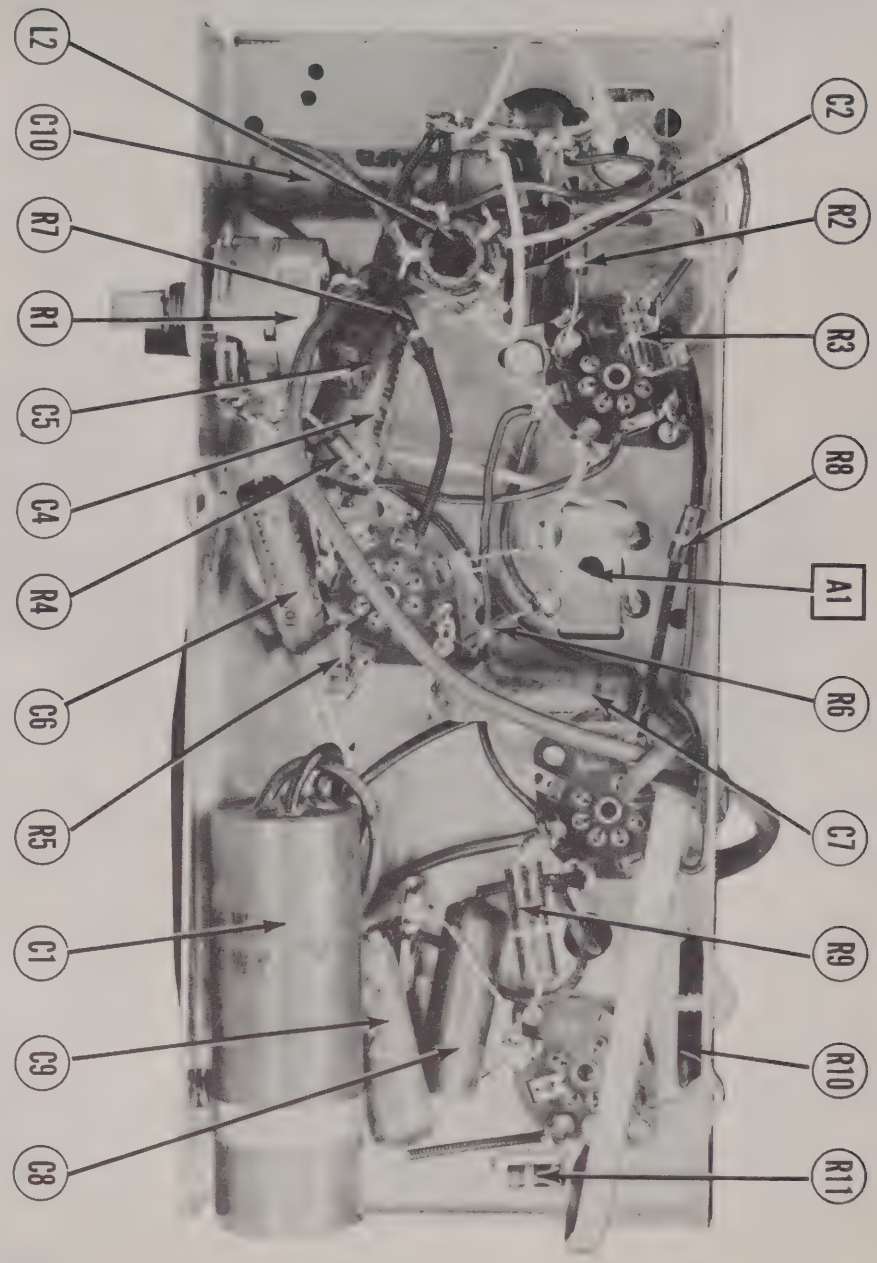
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MANTOLA PART No.	MEISSNER PART No.	
L1	Ant.Coil	85Ω	2.5Ω	LA-8		
L2	Osc.Coil	.5Ω	6Ω	LC-6		
L3	IF Trans.	18.5Ω	18.5Ω	LF-24	16-6678	

MISCELLANEOUS

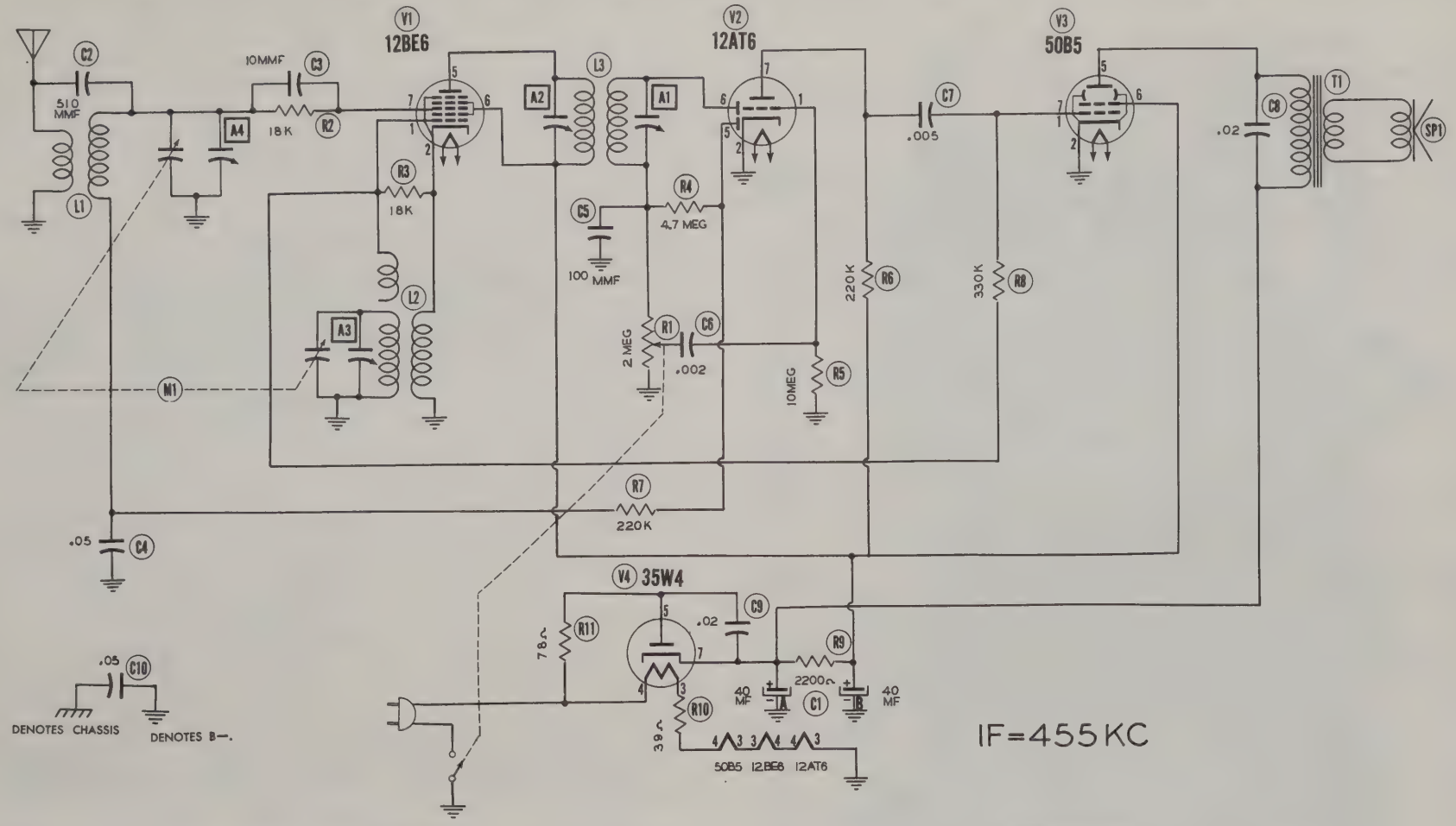
ITEM No.	PART NAME	MANTOLA PART No.	NOTES
M1	2 Gang Var. Cap.	CV-14	(27-446MMF, 24-185MMF)
	Knob	KN-20-2	
	Pointer Knob	KN-21-2	
	Cabinet	CB-106	(Specify Model And Color)

CHASSIS—BOTTOM VIEW



MANTOLA MODEL 92-521

MANTOLA MODEL 92-521



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	§-5.7 VDC	0V	25VAC	12VAC	100VDC	100VDC	0V
V 2	12AT6	-.7VDC	0V	0V	12VAC	-.7VDC	-.6VDC	55VDC
V 3	50B5	-1.3VDC	0V	25VAC	75VAC	117VDC	100VDC	-1.3VDC
V 4	35W4	0V	0V	80VAC	117VAC	115VAC	108VAC	127VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	18KΩ	.5Ω	25Ω	12Ω	†2.2KΩ	†2.2KΩ	6 Meg.
V 2	12AT6	10 Meg.	0Ω	0Ω	12Ω	6 Meg.	1.6 Meg	†220KΩ
V 3	50B5	350KΩ	0Ω	25Ω	78Ω	†230Ω	†2.2KΩ	350KΩ
V 4	35W4	Inf.	Inf.	117Ω	150Ω	150Ω	145Ω	65KΩ

†Measured From Pin 7 Of V4.

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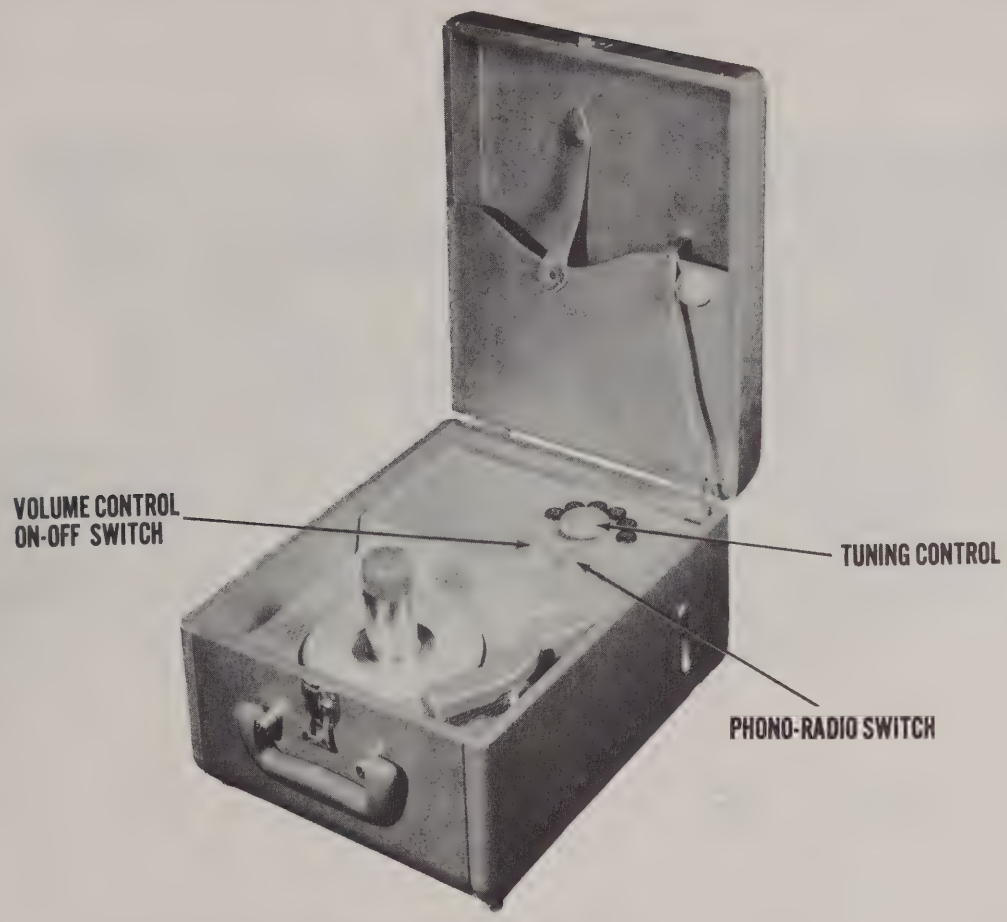
4916-11

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MOTOROLA
MODEL 59F11



MOTOROLA
MODEL 59F11

MOTOROLA MODEL 59F11

TRADE NAME Motorola, Model 59F11 (Ch. HS-188)
MANUFACTURER Motorola Inc., 4545 Augusta Blvd., Chicago 51, Illinois.
TYPE SET AC Operated Portable Phono-Radio, Superheterodyne Receiver with Loop Antenna.
TUBES (FIVE) Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 DET-AVC-AF, 50C5 Power Output, 35W4 Rectifier.

POWER SUPPLY 110-120 Volts AC RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST 535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to rear stator of tuning gang. Low side to B-.	455KC	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation.
2.	.1MFD	"	1620KC	"	"	A5	Adjust for maximum output.
3.		Loop	1400KC	Tune for max. signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

MOTOROLA
MODEL 59F11

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	DET-AVC-AF	12AT6	12AT6	7BT	
V4	Power Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	
C1A	50	150	23B690166	AF88D	UP5315		DY-5030	EL-35	■Filter
B	30	150					-150		▲Filter
C2	.05	200	8S9821	P288-05	GT2S5		ST-4-05	TM-15	AVC Filter
C3A	220		21B482847	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM -325	Diode RF Filter
B	2000			P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	Audio Coupling
C	220			1468-00025	5W5T25	GP2K-250	MO.5-325	1FM -325	AF Plate Bypass
D	5000			P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C4	.1	400	8S9807	P488-1	GT4P1		ST-4-1	TM-1	Bias Filter Note
C5	.02	400	8S9802	P488-02	GT4S2		ST-4-02	TM-12	Output Plate Bypass
C6	.15	200	8A72686	P288-15	GT2P2		ST-4-2	72P52	Line Isolation
C7	.05	400	8S9816	P488-05	GT4S5		ST-4-05	TM-15	Line Filter

Note. Not Used In Early Production.

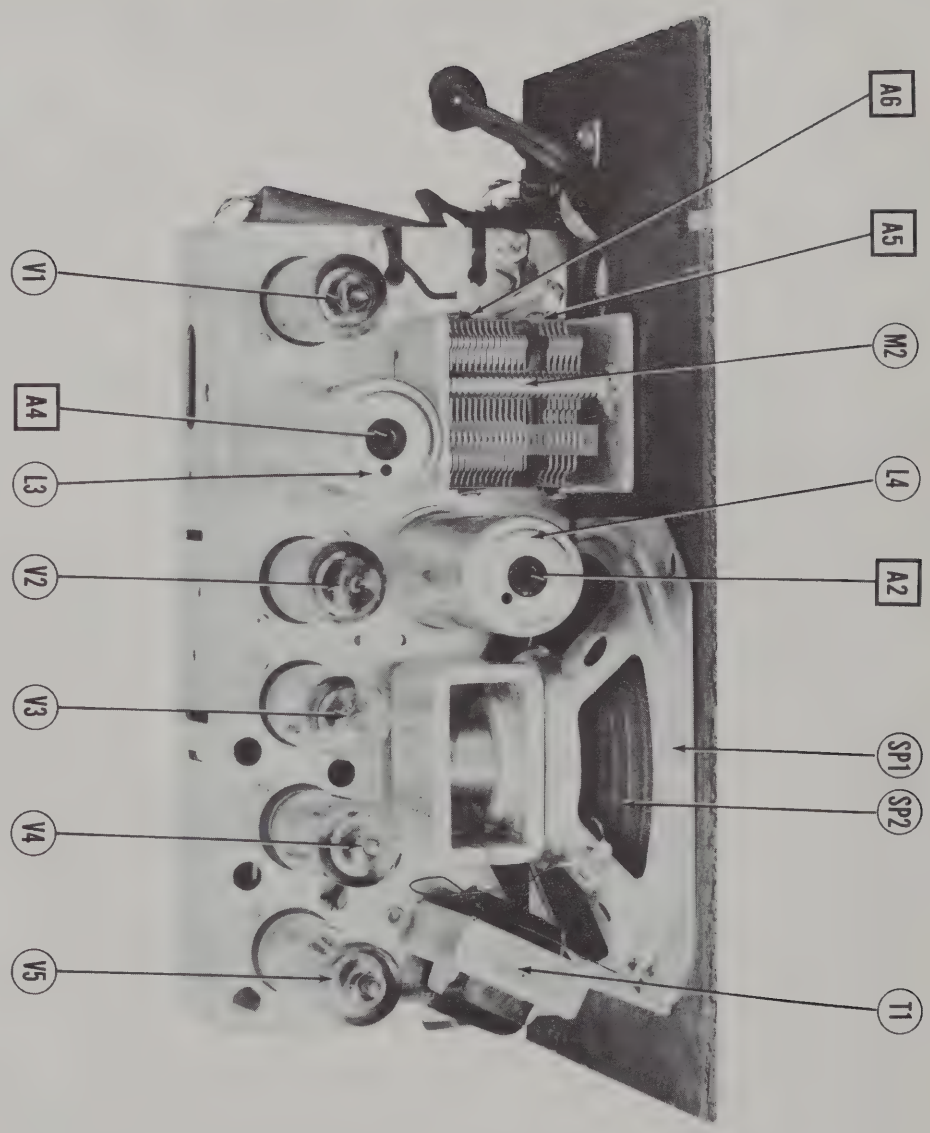
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	1 Meg.	½	18A478122	Q13-137	AM-63-Z	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	
R2	22KΩ	½	6R6028	BTS-22K	Osc. Grid
R3	100Ω	½	6R6018	BW-½-100	IF Cathode
R4	3.3 Meg.	½	6R2118	BTS-3.3 Meg.	AVC Network
R5	100Ω	½	6R6326	BW-½-100	AF Cathode
R6	1500Ω	½	6R6038	BTS-1500	Feedback
R7	1500Ω	½	6R6038	BTS-1500	Feedback
R8	10 Meg.	½	6R2109	BTS-10 Meg.	AF Grid
R9	470KΩ	½	6R6032	BTS-470K	AF Plate
R10	470KΩ	½	6R6032	BTS-470K	Output Grid
R11	150Ω	½	6R3992	BW-½-150	Output Cathode
R12	1000Ω	1	6R3953	BW-1-1000	Filter
R13	27Ω	½	6R5683		Surge Limiter
R14	33KΩ	½	6R6012	BTS-33K	Isolation
R15	22KΩ	½	6R6028	BTS-22K	Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2500Ω	3.4Ω	180Ω	.4Ω	25K680345	A-3332	RO-1A	A-3025	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V.C. IMP.		ST-113		
SP1	PM	3.4Ω	50B690661	MOD.P4-X	4A07	
	CONE DIA.	V.C. DIA.				
SP2	3-7/8"	9/16"				

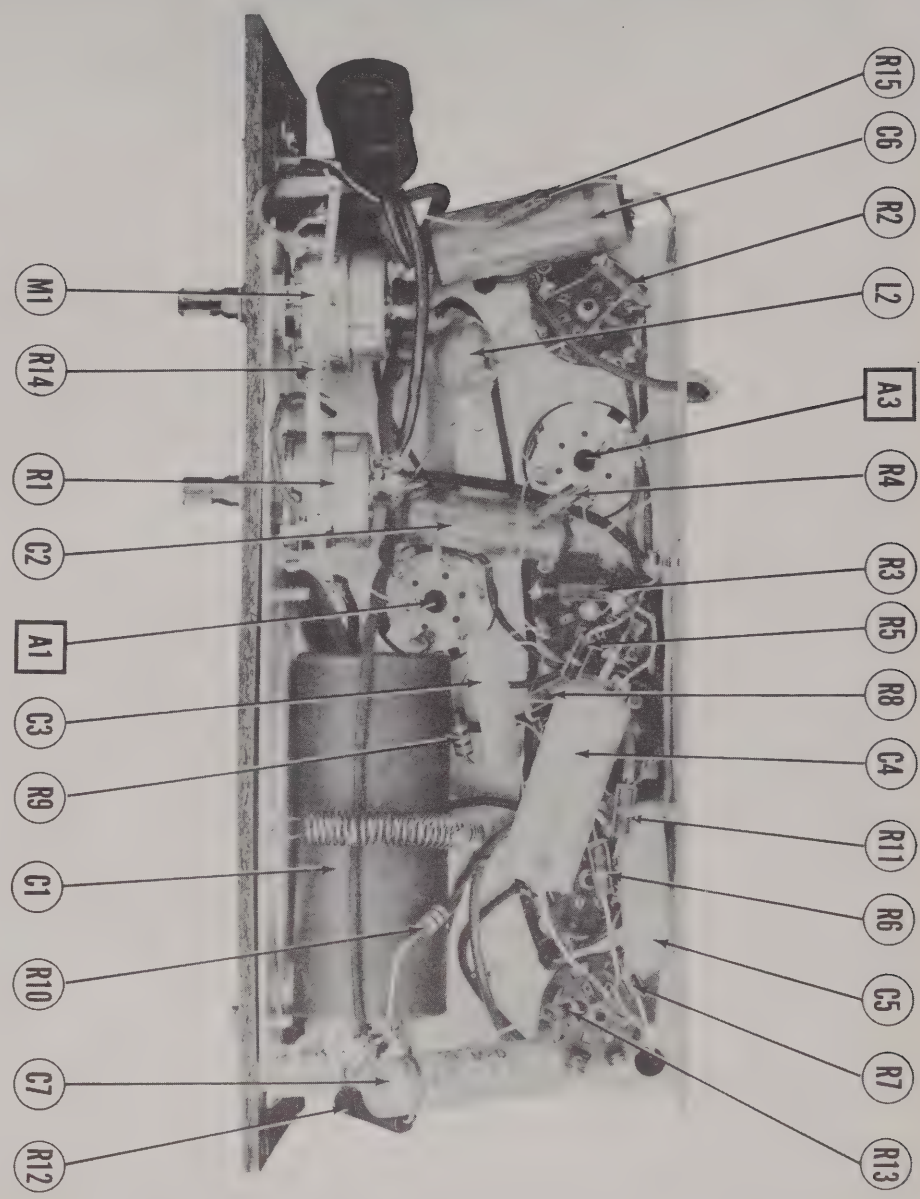
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
L1	Loop Ant.	5Ω		24B690176		
L2	Osc. Coil	10Ω		24A680364		
L3	Input IF	15Ω	15Ω	24B482863	16-6678	
L4	Output IF	15Ω	15Ω	24B482865	16-6678	

MISCELLANEOUS

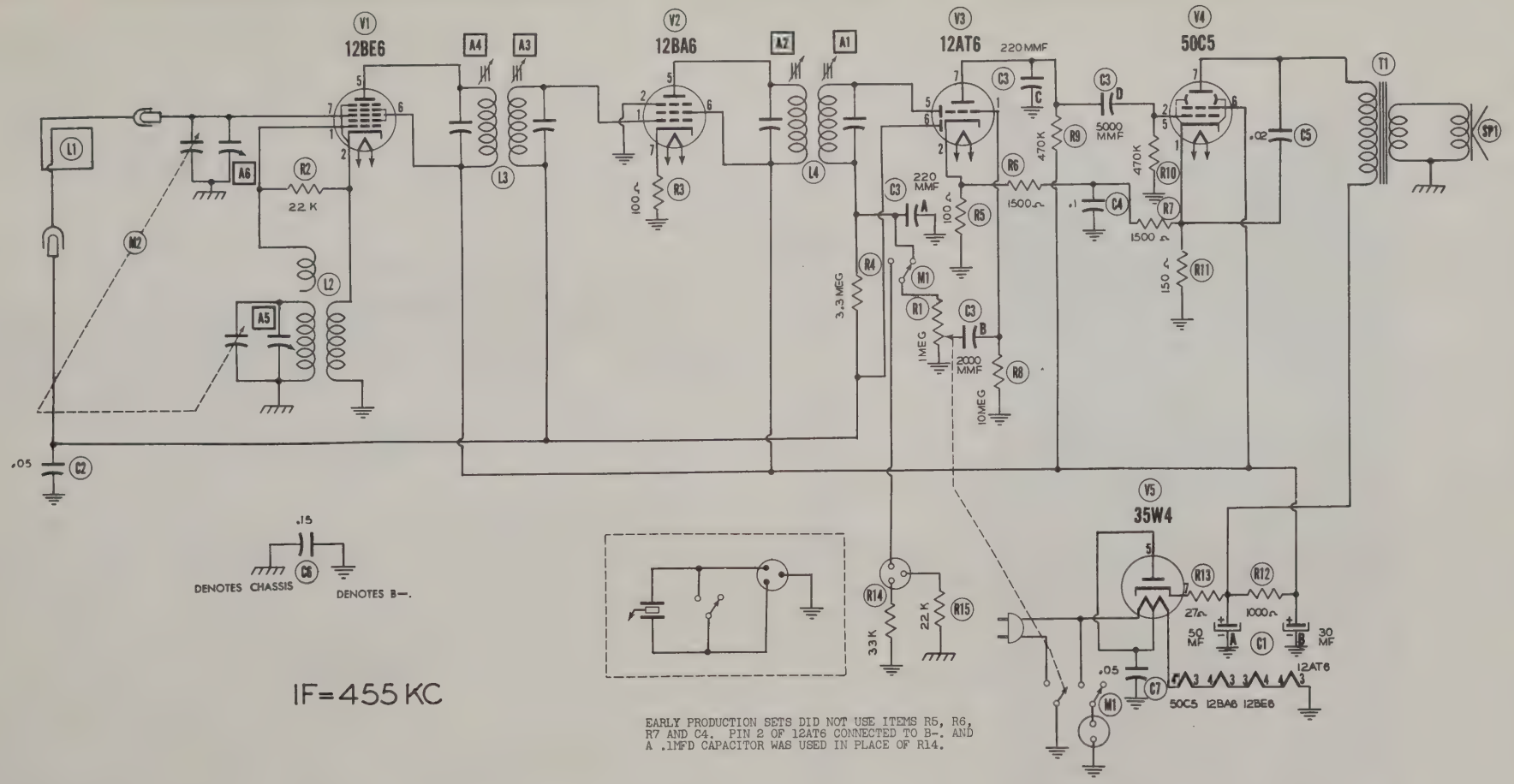
ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	Switch	40A690168	Radio-Phono
M2	2 Gang Var. Cap.	19B478128	(24-387MMF, 14-200MMF)
	Cabinet	16F690128	
	Knob	36K690167	Tuning
	Knob	36K690171	Volume-On/Off

CHASSIS—BOTTOM VIEW



MOTOROLA MODEL 59F11

MOTOROLA MODEL 59F11



EARLY PRODUCTION SETS DID NOT USE ITEMS R5, R6, R7 AND C4. PIN 2 OF 12AT6 CONNECTED TO B-. AND A .1MFD CAPACITOR WAS USED IN PLACE OF R14.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	§-9.2 VDC	0V	27VAC	14VAC	95VDC	95VDC	-.4VDC
V 2	12BA6	-.5VDC	0V	27VAC	38VAC	95VDC	95VDC	1VDC
V 3	12AT6	-.4VDC	.2VDC	0V	14VAC	-.4VDC	-.5VDC	40VDC
V 4	50C5	6VDC	0V	38VAC	90VAC	0V	95VDC	110VDC
V 5	35W4	3.1VDC	0V	90VAC	115VAC	115VAC	117VAC	120VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1.5Ω	26Ω	13Ω	†1000Ω	†1000Ω	4 Meg.
V 2	12BA6	4 Meg.	0Ω	26Ω	38Ω	†1000Ω	†1000Ω	100Ω
V 3	12AT6	10 Meg.	100Ω	0Ω	13Ω	1 Meg.	4 Meg.	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	85Ω	470KΩ	†900Ω	†200Ω
V 5	35W4	800Ω	Inf.	85Ω	118Ω	118Ω	110Ω	150KΩ

†Measured From Pin 7 Of V5.

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4916-12

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

PHILCO
MODEL 48-700

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PHILCO
MODEL 48-700

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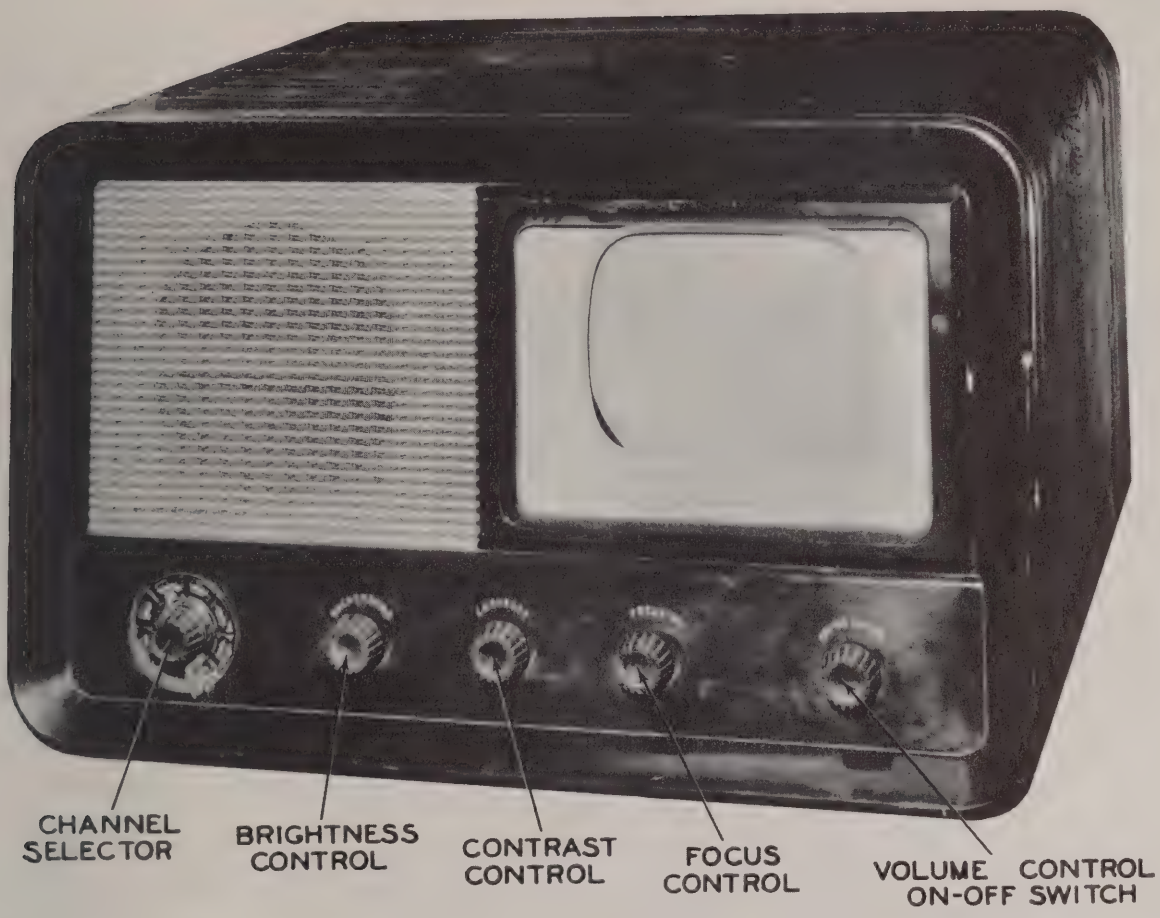
Date 8/49—No. 4916-13 Set No. 68—Folder No. 13

PHILCO
MODEL 48-700



PHILCO
MODEL 48-700

TRADE NAME Philco, Model 48-700
MANUFACTURER Philco Corp., Tioga and "C" Sts., Philadelphia Pa.
TYPE SET Television Receiver
TUBES Twenty-Four

POWER SUPPLY 110-120 Volts, 60 Cycles RATING: 1.66 Amp. @ 117 Volts AC
TUNING RANGE—Channels 2 through 13

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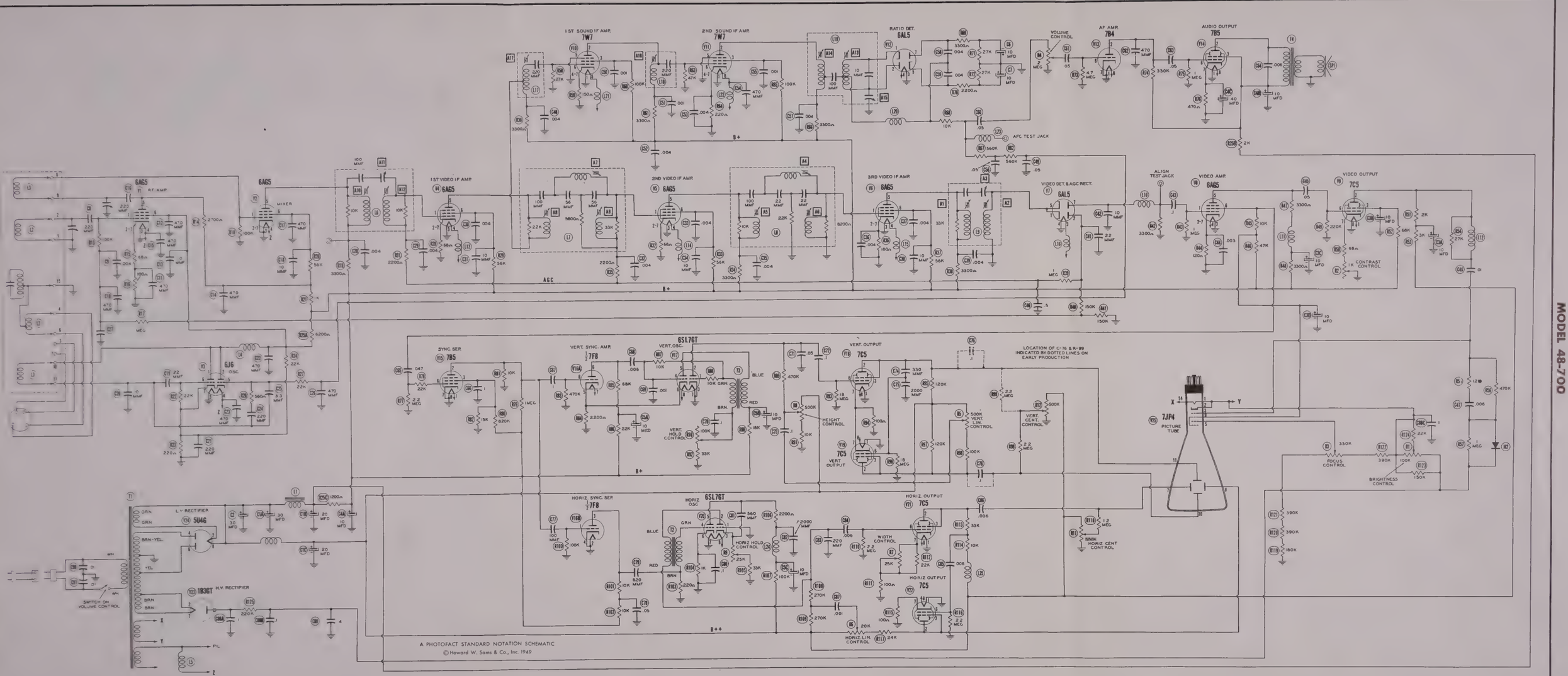
DATE 8/49 4916-13 SET #68 FOLDER 13



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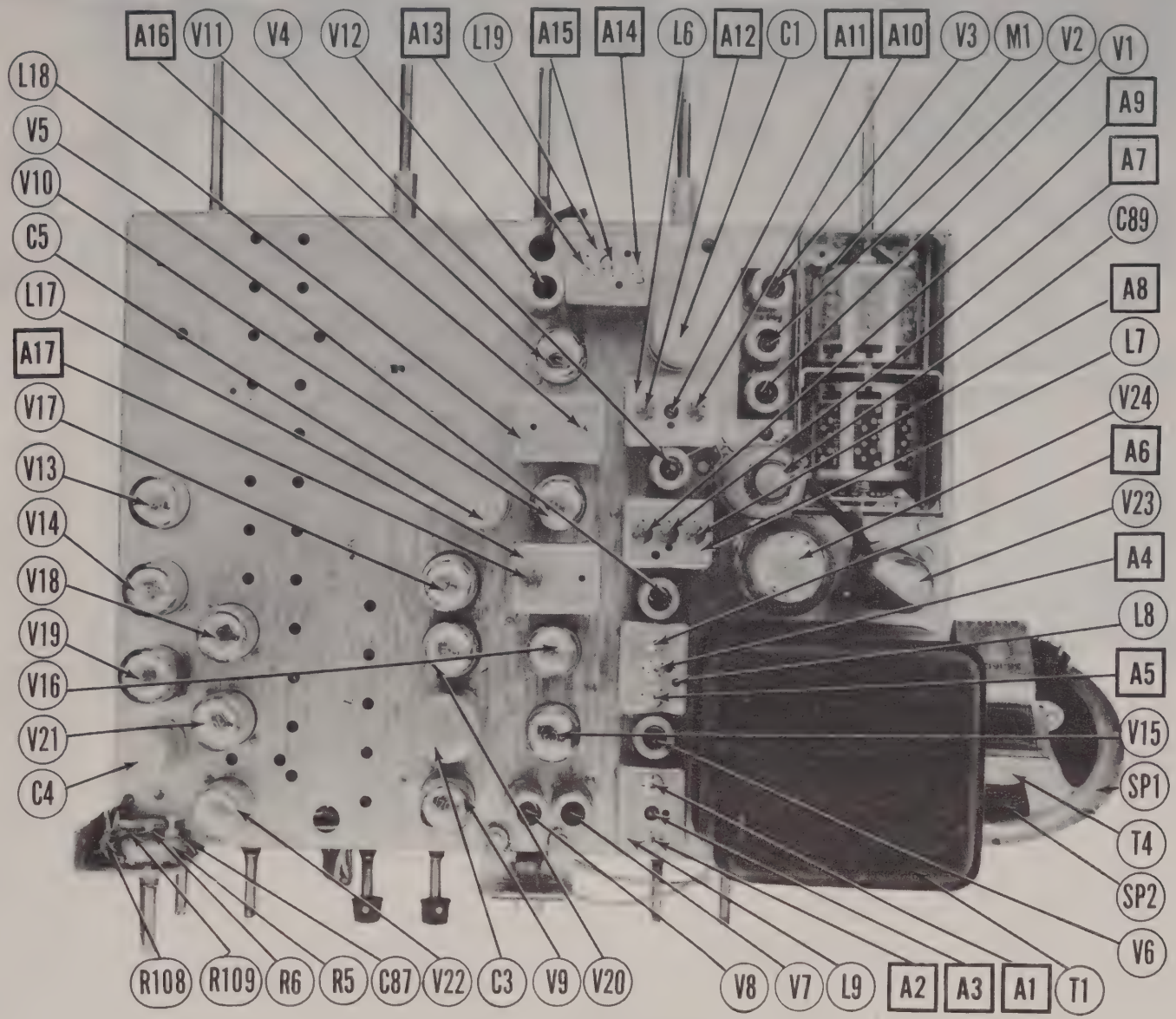
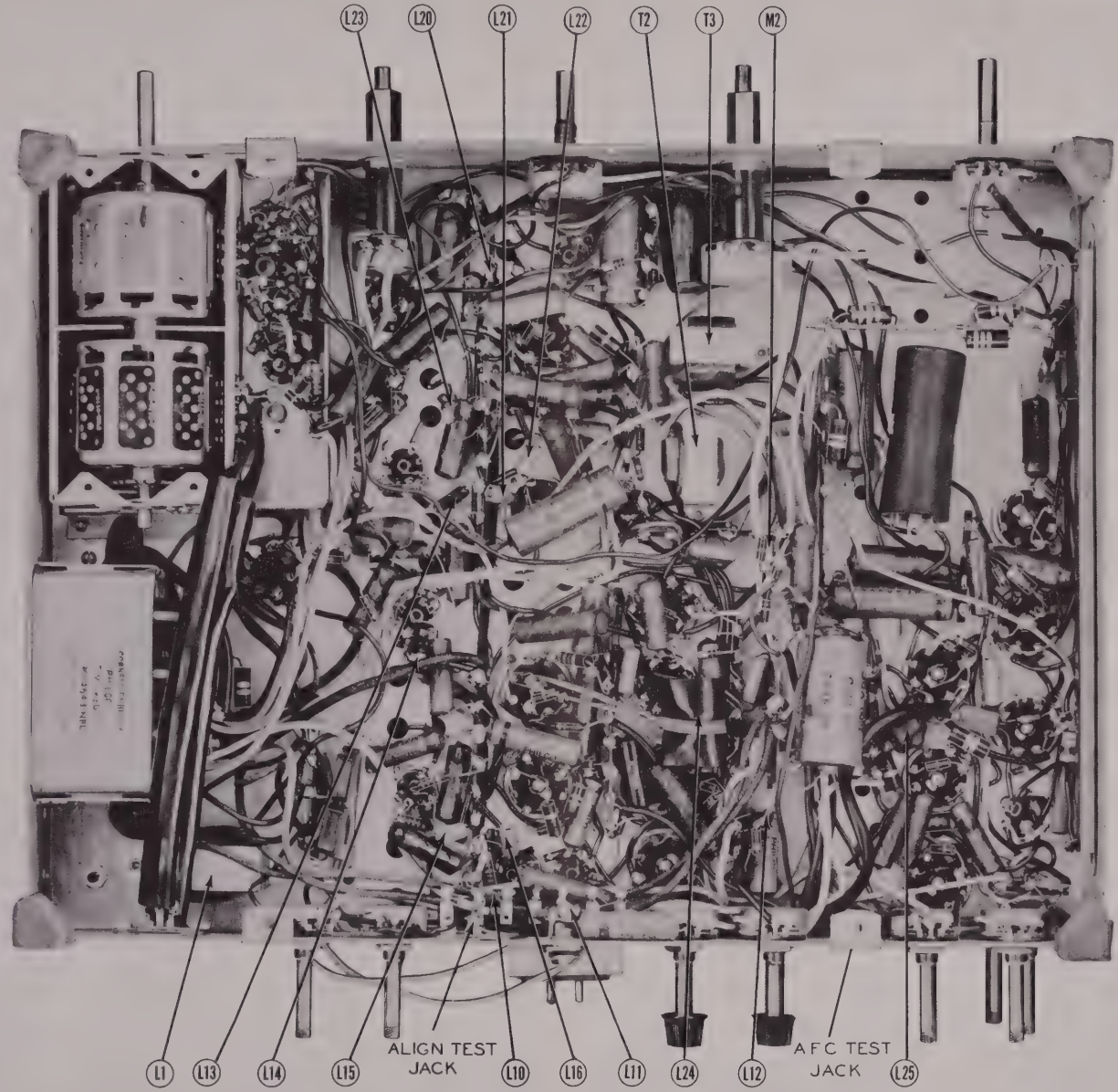
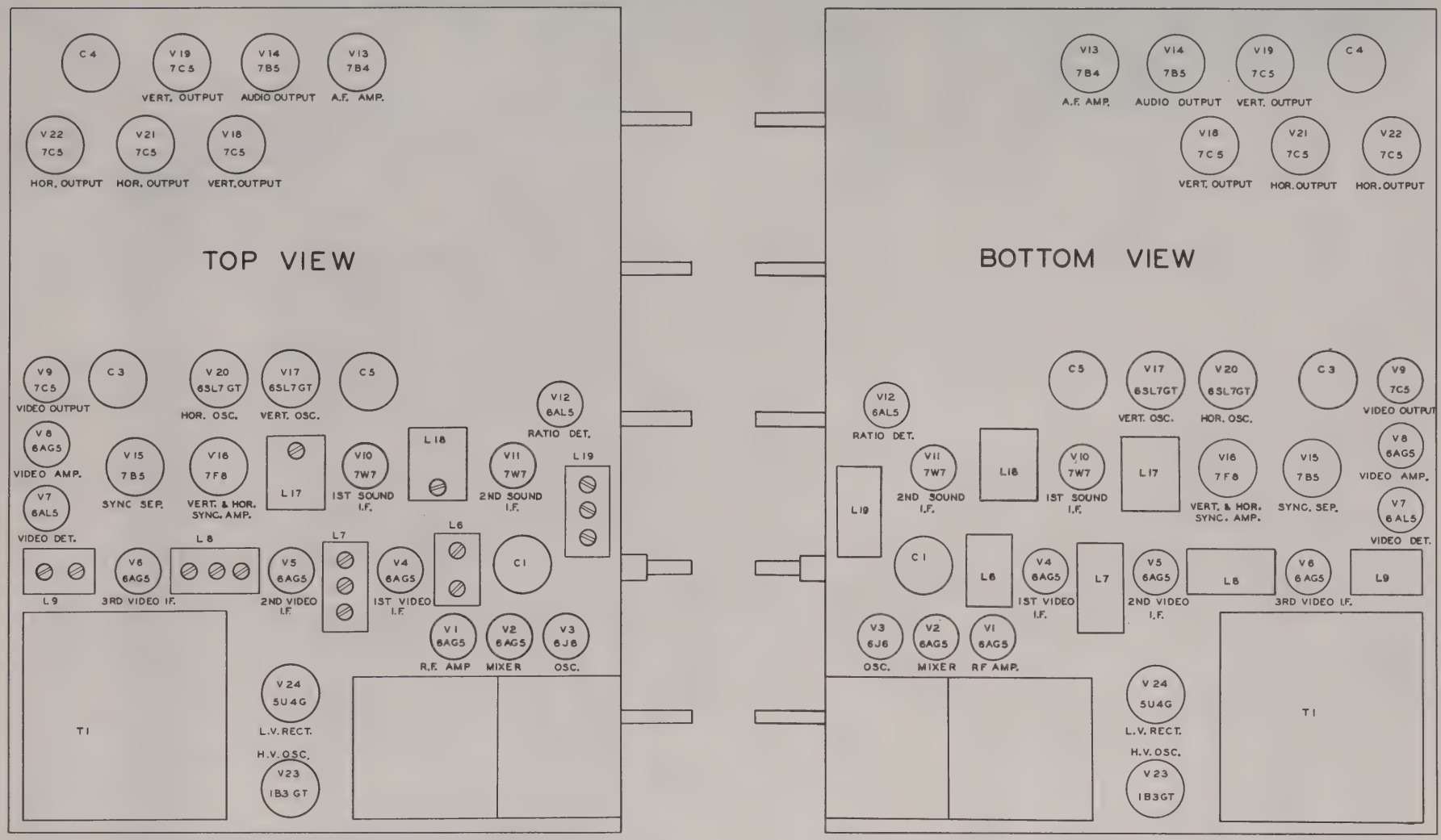
MODEL 48-700



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

This receiver employs a "brute force" type high voltage power supply which presents a shock hazard. Remove the lead connecting to the top cap of the 1B3GT (V23) rectifier tube. Tape the clip end of this lead and dress it away from the chassis and area where your hands may be during alignment. This does not eliminate the hazard entirely but it greatly reduces the possibility of coming in contact with the high voltage.

VIDEO IF ALIGNMENT

Remove the 6J6 oscillator tube (V3) to eliminate the possibility of spurious oscillations giving an incorrect indication on the oscilloscope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to pin 1 (Grid) of 6AG5 (V6). Low side to chassis.	25MC (10MC Sweep)	27.1MC (No. Mod.)	Any	Vert. Amp. thru 10KΩ to "Align Test Jack." Low side to chassis.	A1,A2	Turn A3 fully counter-clockwise. Adjust A1 and A2 for single peak at 27.1MC
2.	Direct	"	"	23.1MC (No. Mod.)	"	"	A3	Adjust A3 until low frequency peak is at 23.1MC as per Fig 1. If necessary, slightly retouch A1 and A2 for equal amplitude of peaks.
3.	Direct	High side to pin 1 (Grid) of 6AG5 (V5). Low side to chassis.	Off	28.1MC (400∿ Mod.)	"	"	A4	Adjust for minimum signal.
4.	Direct	"	25MC (10MC Sweep)	23.75MC 26.6MC (No. Mod.)	"	"	A5,A6	Adjust A5 for low freq. peak and A6 for high freq. peak to obtain pattern as per Fig 2.
5.	Direct	High side to pin 1 (Grid) of 6AG5 (V4). Low side to chassis.	Off	22.1MC (400∿ Mod.)	"	"	A7	Adjust for minimum signal.
6.	Direct	"	25MC (10MC Sweep)	22.75MC 24.25MC 25.75MC 27.0MC (No.Mod.)	"	"	A8,A9	Adjust for pattern similar to Fig 3.
7.	Direct	High side to pin 1 (Grid) of 6AG5 (V2). Low side to chassis.	"	22.6MC 23.75MC 24.6MC 26.6MC (No. Mod.)	"	"	A10, A11, A12	Adjust for overall response curve as per Fig 4. Adjustment A11 governs bandwidth. If necessary, slightly retouch A5, A6, A8 and A9 but do not retouch the other adjustments.

SOUND IF ALIGNMENT

In step 9, it is possible to have the apparent proper curve and yet have the discriminator output improperly phased. Check the phasing by observing the discriminator output voltage polarity. A negative output voltage should be produced when the signal is below center frequency (22.1MC). If this condition does not exist, turn A14 farther clockwise until the correct polarity is obtained.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to pin 6 (Grid) of 7W7 (V11). Low side to chassis.	22MC (6MC Sweep)	22.1MC	Any	Vert.Amp. thru 10KΩ to "AFC Test" jack. Low side to chassis.	A13	Adjust so 22.1MC marker pip occurs at center of pattern as per Fig 5.
9.	Direct	"	"	21.8MC 22.4MC	"	"	A14, A15	Adjust A14 & A15 until 21.8MC and 22.4MC markers appear; one on the negative peak and the other on the positive peak. See instructions above.
10.	Direct	High side to pin 6 (Grid) of 7W7 (V10). Low side to chassis.	"		"	"	A16	Adjust for maximum amplitude keeping peaks at equal amplitude.
11.	Direct	High side to pin 1 (Grid) of 6AG5 (V4). Low side to chassis.	"		"	"	A17	Adjust for maximum amplitude.
12.	Direct	High side to pin 1 (Grid) of 6AG5 (V2). Low side to chassis.	"	21.8MC 22.1MC 22.4MC	"	"		If necessary, slightly retouch A16 and A17 so equal amplitudes are obtained on peaks of the discriminator pattern.
13.	As a final check to determine that the sound trap is aligned at exactly the same frequency as the discriminator center frequency, set the marker generator as in step 12 to the exact center of the discriminator pattern. Then move the scope from the AFC test jack to the "align test" jack and increase the output of the marker generator-do not change the frequency setting. If the marker is not in the sound trap "notch" on the video IF pattern, re-adjust A7 until marker drops into the "notch".							

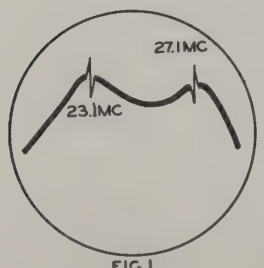


FIG. 1

FIG. 2

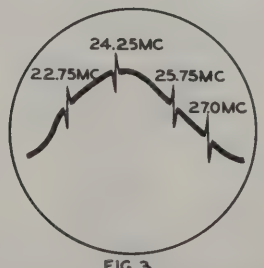


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

The RF Amplifier and Mixer circuits of this receiver are very stable and pre-set at the factory and normally will not require adjustment in the field.

The local oscillator alignment is accomplished by feeding in the sound frequency for a certain channel and adjusting the oscillator circuit of that channel to obtain a zero reading at the discriminator output.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
14.	Two 125Ω carbon res.	Across the low band antenna terminals with 125Ω resistor in each generator lead.	59.75MC (No.Mod.)	2	DC Probe to "AFC Test" jack. Common to chassis.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
15.	"	"	65.75MC 71.75MC 81.75MC 87.75MC	3 4 5 6	"	A19 A20 A21 A22	"
16.	"	Across the high band antenna terminals with 125Ω resistor in each generator lead.	179.75MC 185.75MC 191.75MC 197.75MC 203.75MC 209.75MC 215.75MC	7 8 9 10 11 12 13	"	A23 A24 A25 A26 A27 A28 A29	"

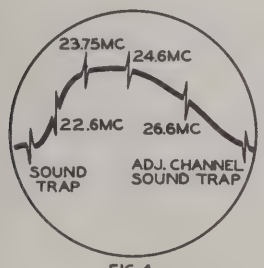


FIG.4

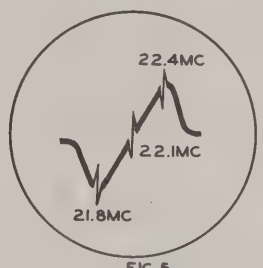
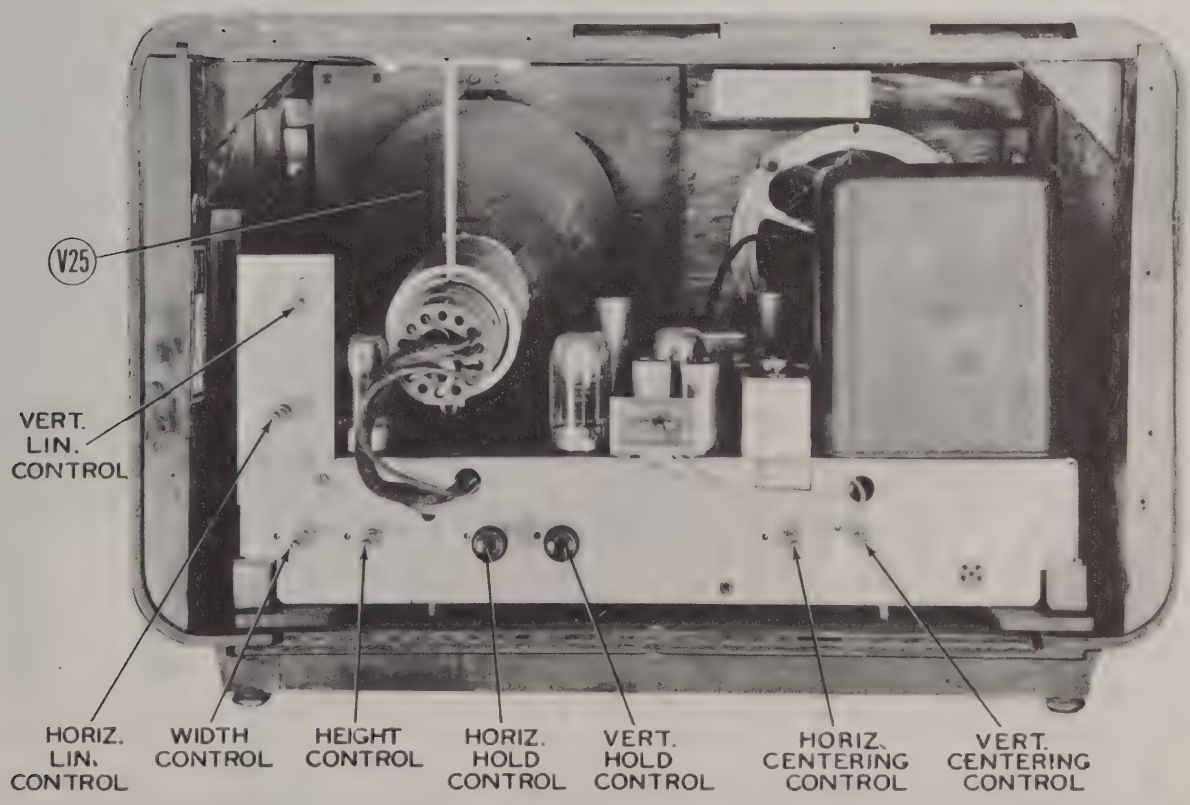


FIG.5

PHILCO MODEL 48-700



CABINET-REAR VIEW

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.1VDC	1.1VDC	0V	6.3VAC	240VDC	140VDC	1.1VDC		
V 2	6AG5	-1.7VDC	0V	0V	6.3VAC	250VDC	150VDC	0V		
V 3	6J6	110VDC	110VDC	0V	6.3VAC	0V	§1.8VDC	4.5VDC		
V 4	6AG5	-.1VDC	.6VDC	0V	6.3VAC	240VDC	140VDC	.6VDC		
V 5	6AG5	-.1VDC	.5VDC	0V	6.3VAC	240VDC	140VDC	.5VDC		
V 6	6AG5	0V	1.5VDC	0V	6.3VAC	240VDC	140VDC	1.5VDC		
V 7	6AL5	0V	-.4VDC	6.3VAC	0V	0V	0V	-.1VDC		
V 8	6AG5	0V	1.2VDC	0V	6.3VAC	210VDC	125VDC	1.2VDC		
V 9	7C5	6.3VAC	320VDC	210VDC	0V	16.5VDC	0V	18VDC	0V	
V 10	7W7	0V	245VDC	85VDC	.8VDC	0V	0V	.8VDC	6.3VAC	
V 11	7W7	0V	245VDC	85VDC	1.5VDC	0V	0V	1.5VDC	6.3VAC	
V 12	6AL5	0V	0V	0V	6.3VAC	.2VDC	0V	-.2VDC		
V 13	7B4	0V	100VDC	0V	0V	0V	-.4VDC	0V	6.3VAC	
V 14	7B5	0V	275VDC	300VDC	0V	0V	0V	17VDC	6.3VAC	
V 15	7B5	6.3VAC	.8VDC	4.3VDC	-.6VDC	250VDC	-.7VDC	0V	0V	
V 16	7F8	-.3VDC	0V	125VDC	0V	2.9VDC	150VDC	6.3VAC	0V	
V 17	6SL7GT	-15.5VDC -17.5VDC	5VDC 135VDC	0V	-15VDC -16VDC	250VDC	2.9VDC	0V	6.3VAC	
V 18	7C5	0V	45VDC	45VDC	400VDC	400VDC	-.6VDC	.6VDC	6.3VAC	
V 19	7C5	0V	55VDC	55VDC	120VDC	0V	-.1VDC	.6VDC	6.3VAC	
V 20	6SL7GT	0V	290VDC	27VDC 47VDC	-.1VDC	165VDC	2.6VDC	0V	6.3VAC	
V 21	7C5	0V	290VDC	290VDC	380VDC	380VDC	0V	.2VDC 33VDC	6.3VAC	
V 22	7C5	0V	150VDC	150VDC	0V	105VDC	-12.5VDC	0V	6.3VAC	
V 23	1B3GT	‡ ♦1.1VAC	‡ ♦1.1VAC	‡ ♦1.1VAC	‡ ♦1.1VAC	‡ ♦1.1VAC	‡ ♦1.1VAC	‡ ♦1.1VAC	‡ ♦1.1VAC	♦TOP CAP -3450VDC
V 24	5U4G	0V	410VDC	400VDC	360VAC	0V	360VAC	0V	410VDC	

PINS		1	2	3	4	5	6	7	8	9	10	11	14
V25	7JP4	♦‡ - 2950VDC	♦ -2950VDC	♦ -3000VDC	0V	♦ -2350VDC	0V	0V 390VDC	150VDC	145VDC	40VDC	0V 370VDC	♦‡ -2950VDC

§ Taken with vacuum tube voltmeter.
♦CAUTION: Turn off set before attaching leads. Clip on leads, then turn on set.
‡ 6.3VAC across filament.
‡ Measured across filament.

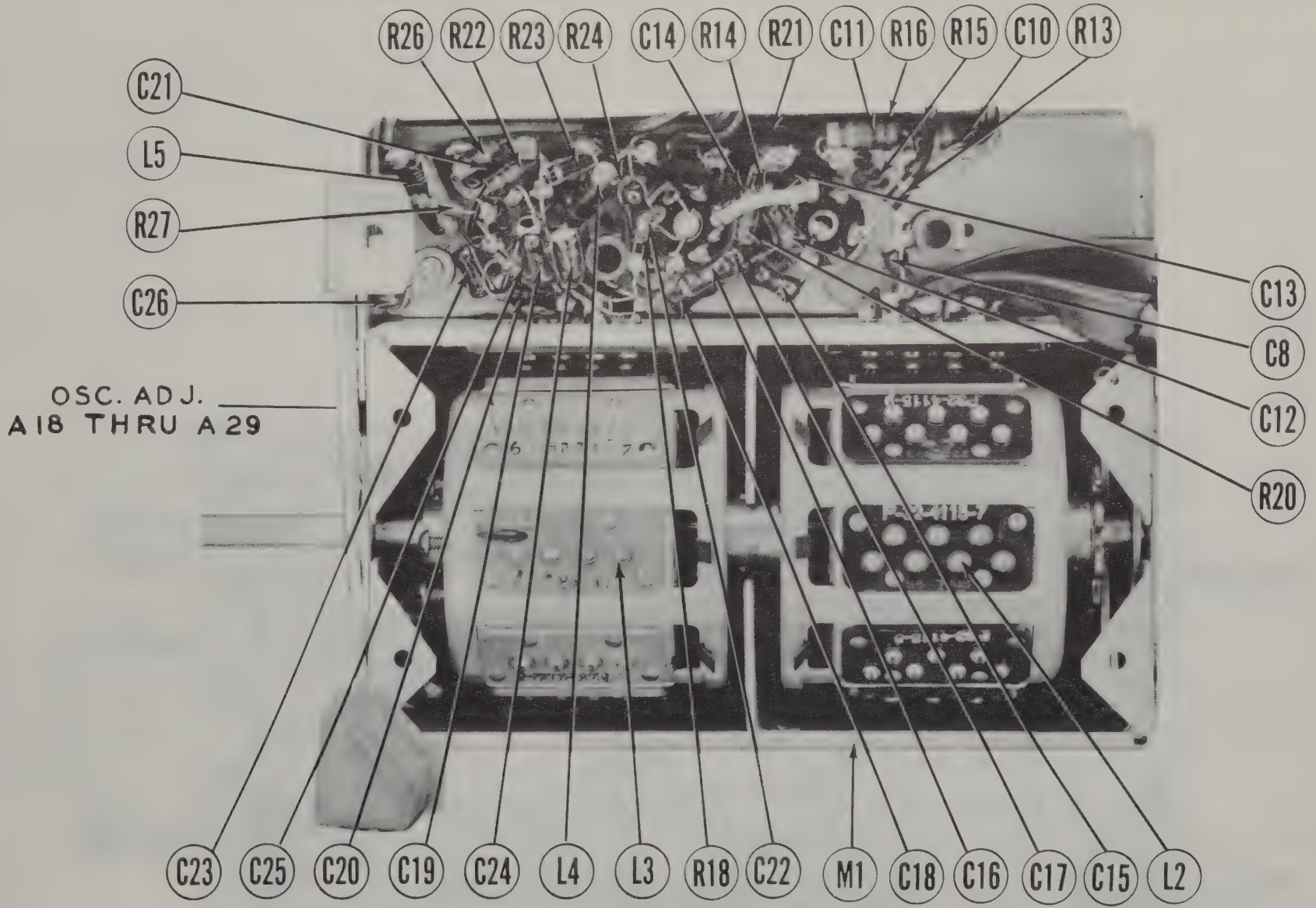
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	1.3 Meg.	170Ω	0Ω	.1Ω	†5KΩ	†7.5KΩ	170Ω		
V 2	6AG5	100KΩ	0Ω	0Ω	.1Ω	†5KΩ	†57.5KΩ	0Ω		
V 3	6J6	†6.3KΩ	†6.3KΩ	0Ω	.1Ω	Inf.	22KΩ	220Ω		
V 4	6AG5	1.3 Meg.	68Ω	0Ω	.1Ω	†5KΩ	†57.5KΩ	68Ω		
V 5	6AG5	1.3 Meg.	68Ω	0Ω	.1Ω	†5KΩ	†57.5KΩ	68Ω		
V 6	6AG5	0Ω	180Ω	0Ω	.1Ω	†5KΩ	†57.5KΩ	180Ω		
V 7	6AL5	0Ω	300KΩ	.1Ω	0Ω	0Ω	Inf.	3.3KΩ		
V 8	6AG5	1 Meg.	120Ω	0Ω	.1Ω	†8KΩ	†58KΩ	120Ω		
V 9	7C5	.1Ω	†5KΩ	†70KΩ	Inf.	1000Ω	220KΩ	1000Ω	0Ω	
V 10	7W7	0Ω	†5KΩ	†100KΩ	150Ω	0Ω	27KΩ	150Ω	.1Ω	
V 11	7W7	0Ω	†5KΩ	†100KΩ	220Ω	0Ω	47KΩ	220Ω	.1Ω	
V 12	6AL5	Inf.	Inf.	0Ω	.1Ω	29KΩ	Inf.	30KΩ		
V 13	7B4	0Ω	†330KΩ	0Ω	0Ω	0Ω	4.7 Meg.	0Ω	.1Ω	
V 14	7B5	0Ω	†3KΩ	†2.3KΩ	0Ω	Inf.	1 Meg.	470Ω	.1Ω	
V 15	7B5	.1Ω	†33KΩ	†39KΩ	2.2 Meg.	†1.5KΩ	2.2 Meg.	0Ω	0Ω	
V 16	7F8	100KΩ	0Ω	†21KΩ	0Ω	2.2KΩ	†90KΩ	.1Ω	470KΩ	
V 17	6SL7GT	140KΩ 45KΩ	†590KΩ †450KΩ	0Ω	140KΩ 45KΩ	†18KΩ	2.2KΩ	0Ω	.1Ω	
V 18	7C5	0Ω	†110KΩ	†110KΩ	†120KΩ	†120KΩ	18 Meg.	100Ω	.1Ω	
V 19	7C5	0Ω	†110KΩ	†110KΩ	200KΩ	Inf.	18 Meg.	100Ω	.1Ω	
V 20	6SL7GT	0Ω	†540KΩ	58KΩ 32KΩ	220Ω	†100KΩ	1000Ω	0Ω	.1Ω	
V 21	7C5	0Ω	†43KΩ	†43KΩ	†10KΩ	†10KΩ	2.2Meg.	12.5KΩ 100Ω	.1Ω	
V 22	7C5	0Ω	†44KΩ	†44KΩ	Inf.	52KΩ	2.2Meg.	100Ω	.1Ω	
V 23	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP 2 Meg.
V 24	5U4G	Inf.	24KΩ	24KΩ	28Ω	Inf.	30Ω	Inf.	24KΩ	

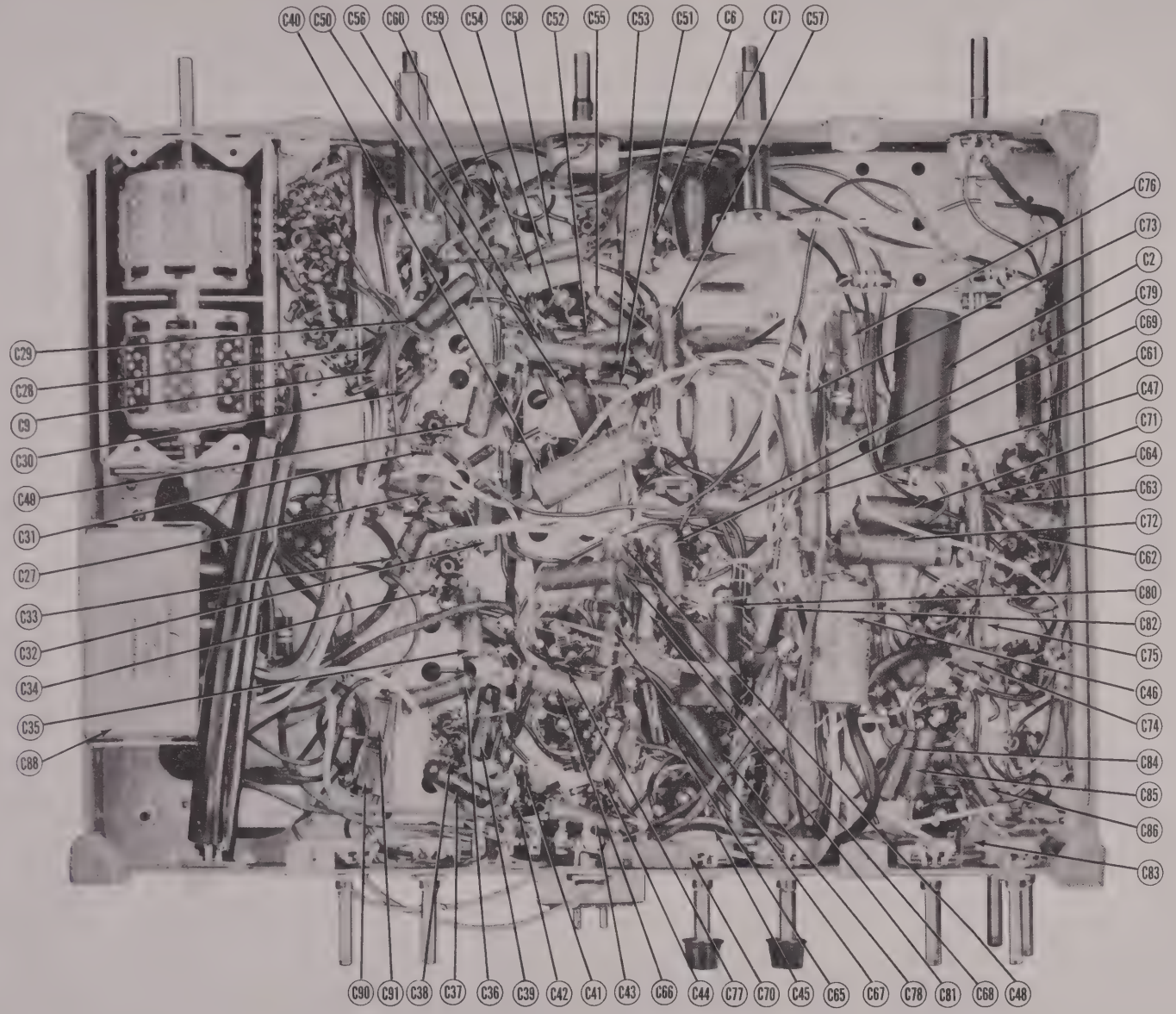
PINS		1	2	3	4	5	6	7	8	9	10	11	14
V25	7JP4	2 Meg.	2 Meg.	2.5 Meg.	Inf.	1.5 Meg.	Inf.	1.5 Meg. 1.3 Meg.	†44KΩ	†48KΩ	110KΩ	2.6 Meg. 2.4 Meg.	2 Meg.

† Measured from pin 8 of V24

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

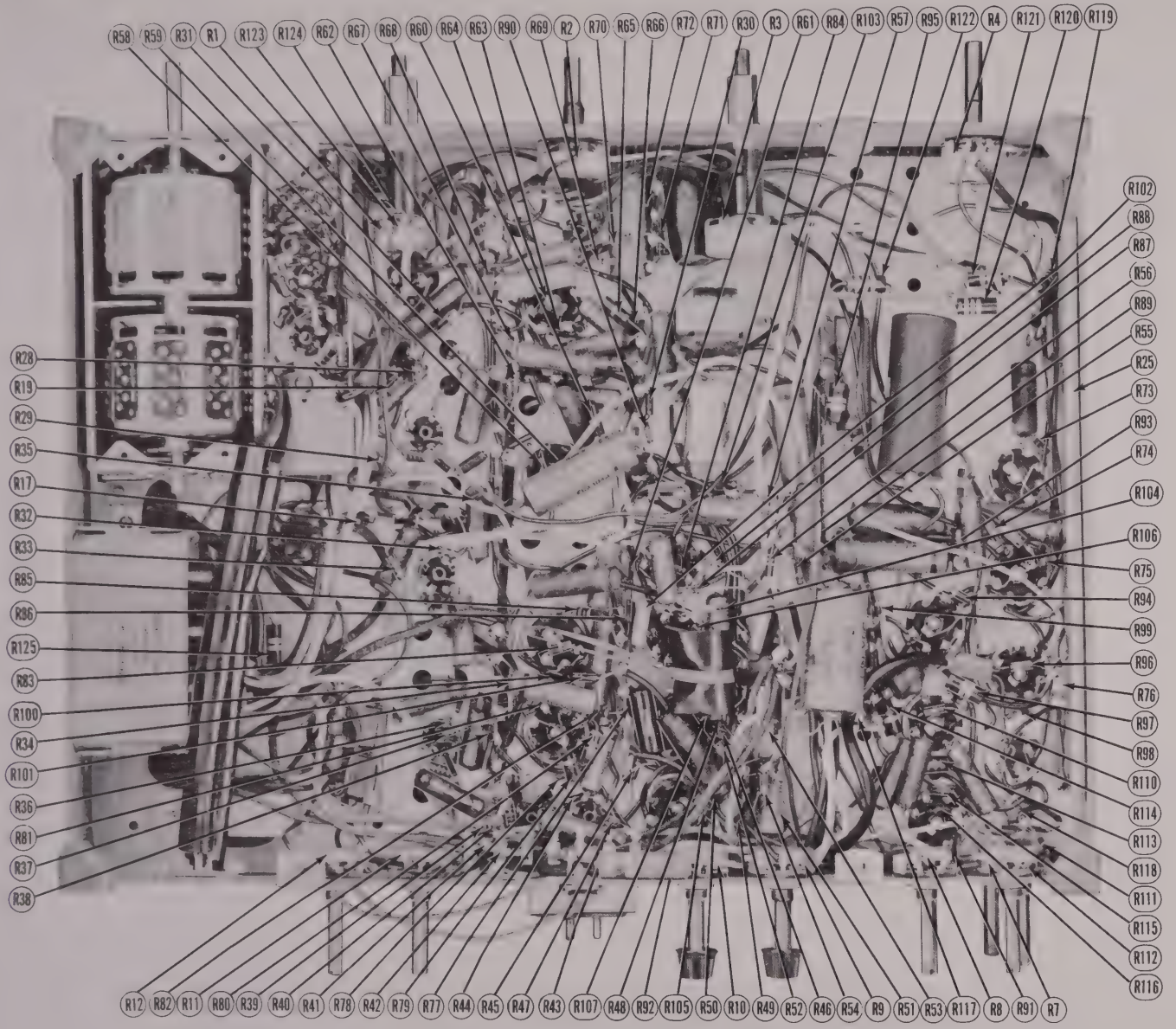


RF TUNER-BOTTOM VIEW

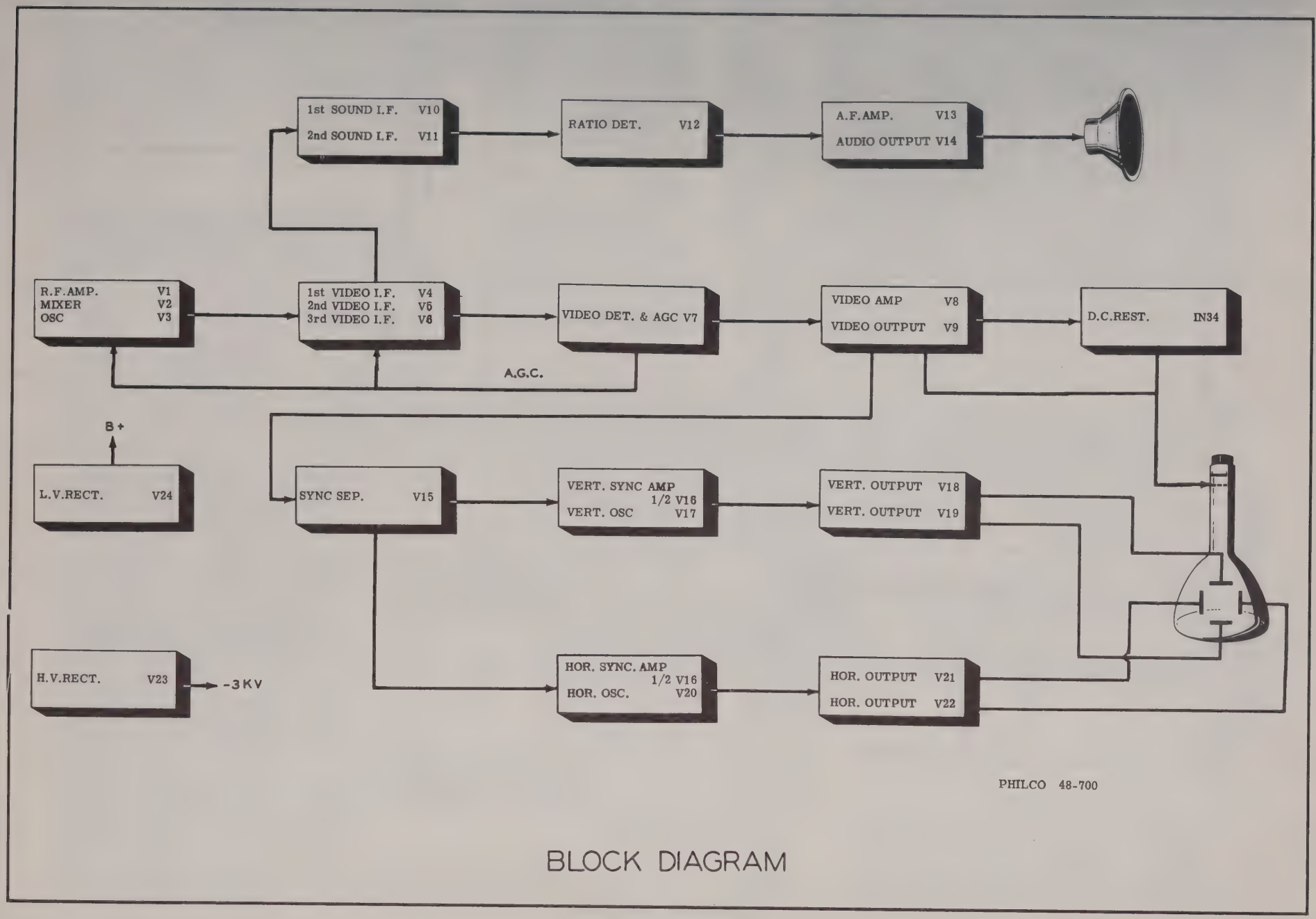


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

PHILCO
MODEL 48-700



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



BLOCK DIAGRAM

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	1st Amp.	[illegible]	[illegible]	[illegible]	
V2	Mixer	[illegible]	[illegible]	[illegible]	
V3	2nd [illegible]	[illegible]	[illegible]	[illegible]	
V4	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T4	13KΩ	3.5Ω	500Ω	.3Ω	32-8244-2	A-3823	RO-303	A-2901	

SPEAKER

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	300Ω	3.5Ω	36-1613-1		Speacial ‡	‡ Supplied on order. State field resistance and current.
	CONE DIA.	V. C. DIA.				
SP2	6"	3/4"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	PHILCO PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
L1	.051A	190Ω	5 Henries	32-8312	C-1080	R-650	C-2977	

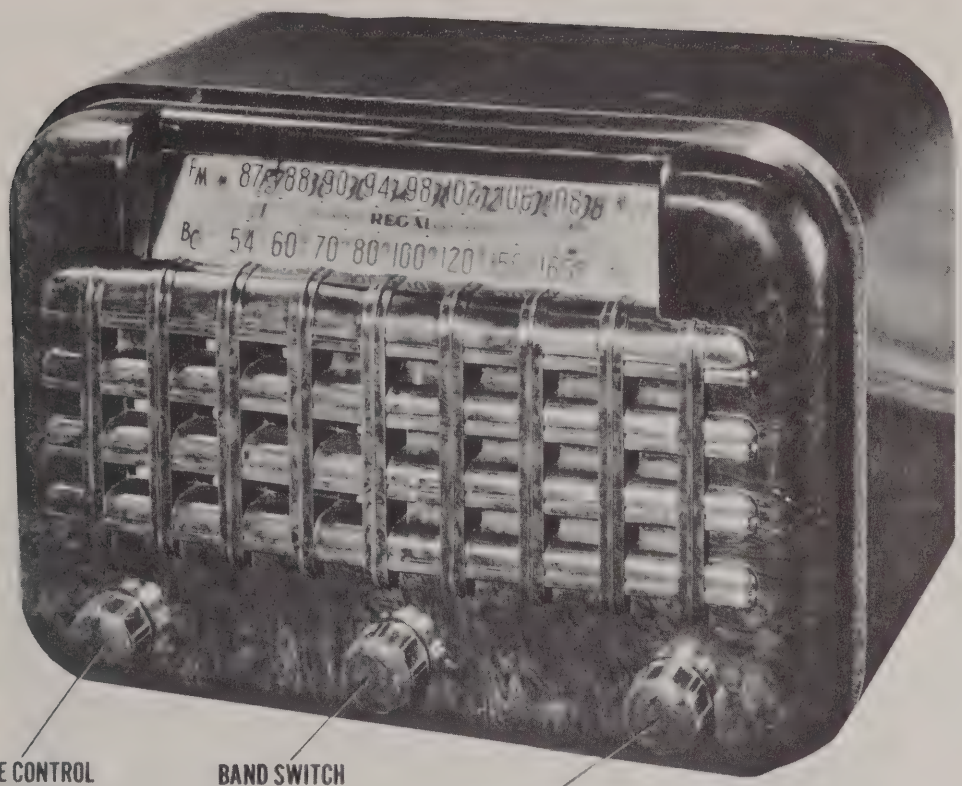
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	
L2	Ant.& RF Assy.	0Ω		32-4115		Add channel number as suffix to part number for channel desired.
L3	Osc.& Mixer Assy.	0Ω		32-4222		Add channel number as suffix to part number for channel desired.
L4	RF Choke	.1Ω		32-4112-2		
L5	Fil. Choke	.1Ω		32-4112-4		
L6	1st Video IF Trans.	.4Ω	.2Ω	32-4093		
L7	2nd Video IF Trans.	.4Ω	.2Ω	32-4213		
L8	3rd Video IF Trans.	.4Ω	.2Ω	32-4213-1		
L9	4th Video IF Trans.	.4Ω	.2Ω	32-4213-1		
L10	Peaking	4.5Ω		32-4143		
L11	Peaking	3Ω		32-4143-2		
L12	Peaking	3Ω		32-4143-2		
L13	Fil. Choke	.1Ω		32-4112-3		
L14	Fil. Choke	.1Ω		32-4112-3		
L15	Fil. Choke	.1Ω		32-4112-3		
L16	Fil. Choke	.1Ω		32-4112-3		
L17	1st Sound IF	0Ω		32-4100		
L18	2nd Sound IF	0Ω		32-4099		
L19	Ratio Det. Trans.	0Ω	0Ω	32-4214-1		
L20	RF Choke	2Ω		32-4143-1		
L21	Fil. Choke	.1Ω		32-4112-3		
L22	Fil. Choke	.1Ω		32-4112-3		
L23	RF Choke	2Ω		32-4143-1		
L24	RF Choke	400Ω		32-4256		
L25	Peaking	120Ω		32-4276		

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M1	Tuner	76-3109-1	Includes contact panels, shaft and drum assembly.
M2	Crystal	54-6001	DC Restorer Sylvania 1N 34
	Cabinet	10671	
	Cabinet Back	76-3057FJ31	
	Knob	54-4376	Contrast, On-Off,-Vol, Focus and Brightness
	Selector Knob and Spring Assy.	76-2953	
	Station Selector Assy. Spring	56-5241	
	Safety Glass	27-5948	

REGAL
MODEL FM78



REGAL
MODEL FM78

REGAL MODEL FM78

TRADE NAME	Regal, Model FM78
MANUFACTURER	Regal Electronics Corp., 605 W. 130th St., New York, New York
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Antenna
TUBES(EIGHT)	Types 6BJ6 RF Amp., 12AT7 FM Converter, 12BE6 AM Converter, 6BJ6 1st IF Amp., 6BJ6 FM 2nd IF Amp., 12AL5 Ratio DET., 12AT6 AM DET-AVC-AF, 50L6GT Power Output.
POWER SUPPLY	105-125 Volts AC-DC RATING: .32 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1650KC FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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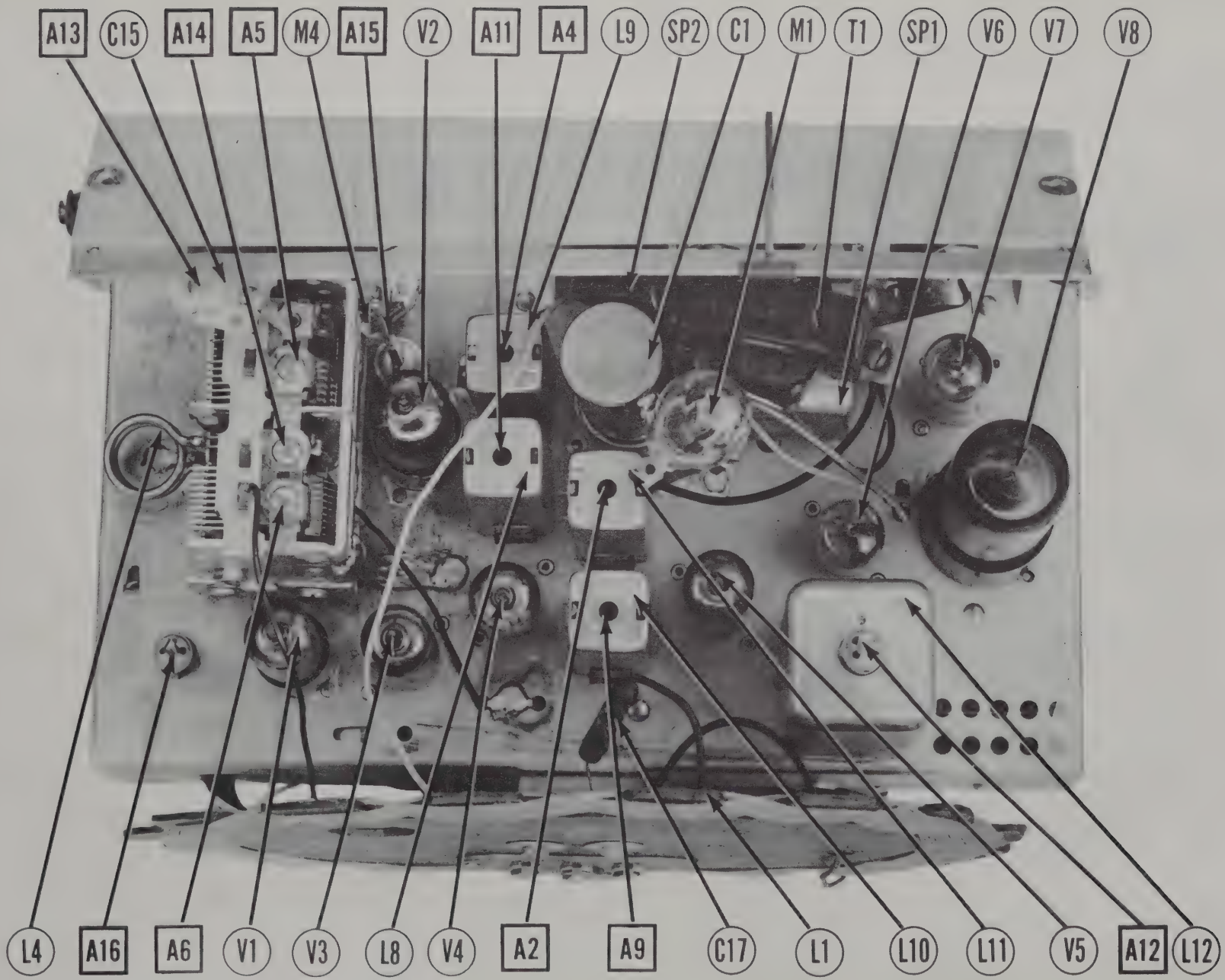
DATE 8/49 4916-14 SET #68 FOLDER 14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C15
A14
A5
M4
A15
V2
A11
A4
L9
SP2
C1
M1
T1
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V7
V8
L4
A16
A6
V1
V3
L8
V4
A2
A9
C17
L1
L10
L11
V5
A12
L12

REGAL
MODEL FM78

PAGE 3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: REGAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6BJ6	6BJ6	7CM	
V2	FM Converter	12AT7	12AT7	9A	
V3	AM Converter	12BE6	12BE6	7CH	
V4	1st IF Amp.	6BJ6	6BJ6	7CM	
V5	2nd IF Amp.	6BJ6	6BJ6	7CM	
V6	Ratio Det.	12AL5	12AL5	6BT	
V7	DET-AVC-AF	12AT6	12AT6	7BT	
V8	Audio Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: REGAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	150	60-110	AF888D	UP		DY-4030	EL-340	■ Filter
B	40	150			43215		20-150		▲ Filter
C	20	150							Filter
C2	5	25	60-114	PRS150/4	BR550		M-4-150	TA-5	Stabilizing Cap
C3	1500		55-114	1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	Ant. Isolation Note 2
C4	50			1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	RF Coupling Note 3
C5	1000		55-114	1468-001	1W5D1	GP2L-001	MW.5-21	1FM-21	FM RF Cath. Bypass
C6	5000		55-113	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	FM RF Screen " Note 2
C7	50		55-101	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	RF Coupling
C8	50		55-101	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	RF Coupling
C9	100		55-102	1469-0001	5R5T1	NP0M-100	MOS.5-31	MS-31	Fixed Padder Note 3
C10	2.2		55-121						Osc. Coupling
C11	5000		55-113	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	FM Conv. Cath. Bypass
C12	5000		55-113	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	FM Osc. Plate Bypass Note 2
C13	50		55-101	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	FM Osc. Grid Cap
C14	50		55-101	1469-00005	5R5Q5	NP0M-50	MOS.5-45	MS-45	Fixed Padder
C15	2.5 -13					TS2A-N500 -2.5-13			Variable Trimmer
C16	5000		55-113	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Filament Bypass
C17	.002	400	50-125	P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	Ext. Ant. Isolation
C18	100	500	55-102	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	AM Osc. Grid Cap
C19	10	500		1469-00001	5R5Q1	NP0K-10	MOS.5-41	MS-41	Fixed Trimmer Note 3
C20	.05	400	50-104	P488-05	GT4S5		ST-4-05	TM-15	AVC Filter
C21	5000		55-113	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	FM Conv. Plate Dec.
C22	.002	400	55-125	P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	1st IF Decoupling
C23A	100		Note 1	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Filter
B	100		Note 1	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Filter
C24	1000		55-114	1468-001	1W5D1	GP2L-001	MW.5-21	1FM-21	2nd IF Cath. Bypass
C25	.01	400	50-102	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	RF Bypass
C26	5000		55-113	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Filament Bypass
C27	250	500	55-103	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	Diode Load Cap
C28	.005	400	55-113	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	De-emphasis
C29	1500	500	55-112	1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	RF Bypass
C30	.02	200	50-124	P288-02	GT2S2		ST-4-02	TM-12	Audio Coupling
C31	5000		55-113	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	AVC Filter
C32	5000		55-113	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Ratio Det. Fil. Bypass
C33	5000		55-113	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Ratio Det. Fil. Bypass
C34	.005	400	50-123	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C35	100	500	55-103	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	AF Plate Bypass Note 4
C36	.01	400	50-102	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C37	.01	400	50-102	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Output Plate Bypass
C38	.01	600	50-104	P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	RF Bypass Note 5
C39	.05	400	50-103	P488-05	GT4S5		ST-4-05	TM-15	Line Filter
C40	100	500	55-102	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	FM Ant. Coupling

Note 1. Items C23A, C23B, And R14 Are Combined Into One Unit, Obtainable Under Manufacturer's Part No. 55-115.
Note 2. Some Models Use 1000MMF In This Application.
Note 3. Not Used In All Models.
Note 4. Some Models Use 250MMF In This Application.

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: REGAL PART No.	REPLACEMENT DATA: MEISSNER PART No.	
L1	AM Loop Ant	1Ω		30-172		
L2	FM Ant.Coil	0Ω				
L3	FM RF Choke	.1Ω				
L4	FM RF Coil	0Ω				
L5	FM RF Choke	.1Ω				
L6	FM Osc.Coil	0Ω				
L7	AM Osc.Coil	1Ω				
L8	FM 1st IF	.5Ω	.5Ω	30-156		
L9	AM 1st IF	15Ω	15Ω	30-154	16-6668	
L10	FM 2nd IF	.5Ω	.5Ω	30-157		
L11	AM 2nd IF	10Ω	10Ω	30-155	16-6669	
L12	Ratio Det.	3Ω	.1Ω	30-158		
L13	Filament Choke	1Ω				
L14	Line Choke	1Ω				Each Section Has 1Ω Resistance.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: REGAL PART No.	REPLACEMENT DATA	NOTES
M1	Screw	120					120V 7W Type C-7

MISCELLANEOUS

ITEM No.	PART NAME	REGAL PART No.	NOTES
M2	Rectifier	175-2	Selenium
M3	Switch	95-109	Band
M4	2 Gang Var. Cap.	40-114	(28-435MMF, 26-240MMF)

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	REGAL PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	500KΩ	½	20-101	Q13-133	AM-60-Z	Volume control
B				Not Req.	KSS-3	Attach to R1A per instructions
C				76-1	SW-A	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	REGAL PART No.	IRC PART No.	
R2	100KΩ	½	65-125	BTS-100K	RF Grid
R3	68Ω	½	65-169	BW-½-68	RF Cathode
R4	470Ω	½	65-172	BTS-470	RF Decoupling
R5	470KΩ	½	65-109	BTS-470K	FM Conv. Grid
R6	470Ω	½	65-172	BTS-470	FM Conv. Plate Decoupling
R7	2200Ω	½	65-192	BTS-2200	FM Conv. Cathode
R8	15KΩ	½	65-155	BTS-15K-5%	FM Osc. Grid 5%
R9	1000Ω	½	65-119	BTS-1000	FM Osc. Plate Decoupling
R10	22KΩ	½	65-105	BTS-22K	AM Osc. Grid
R11	1000Ω	½	65-119	BTS-1000	1st IF Decoupling
R12	68Ω	½	65-169	BW-½-68	2nd IF Cathode
R13	1000Ω	½	65-119	BTS-1000	2nd IF Decoupling
R14	47KΩ	½	Note 1	BTS-47K	Diode Filter
R15	2.2 Meg.	½	65-110	BTS-2.2 Meg.	Diode Load
R16	1 Meg.	½	65-126	BTS-1 Meg.	AVC Network
R17	150Ω	½	65-103		Balancing
R18	15KΩ	½	65-155	BTS-15K-5%	De-emphasis 5%
R19	27KΩ	½		BTS-27K	Ratio Det. Diode Load
R20	220KΩ	½	65-108	BTS-220K	AVC Network
R21	470KΩ	½	65-109	BTS-470K	AVC Network
R22	10 Meg.	½	65-129	BTS-10 Meg.	Delayed AVC
R23	10 Meg.	½	65-129	BTS-10 Meg.	AF Grid
R24	220KΩ	½	65-108	BTS-220K	AF Plate
R25	470KΩ	½	65-109	BTS-470K	Output Grid
R26	150Ω	½	65-103	BW-½-150	Output Cathode
R27	820Ω	1	65-186	BW-1-820	Filter
R28	180Ω	1	65-185	BW-1-180	Filter (Wire Wound)
R29	27Ω	1	65-184		Surge Limiter (Wire Wound)
R30	180Ω	1	65-185	BW-1-180	Series Dial Lamp (Wire Wound)

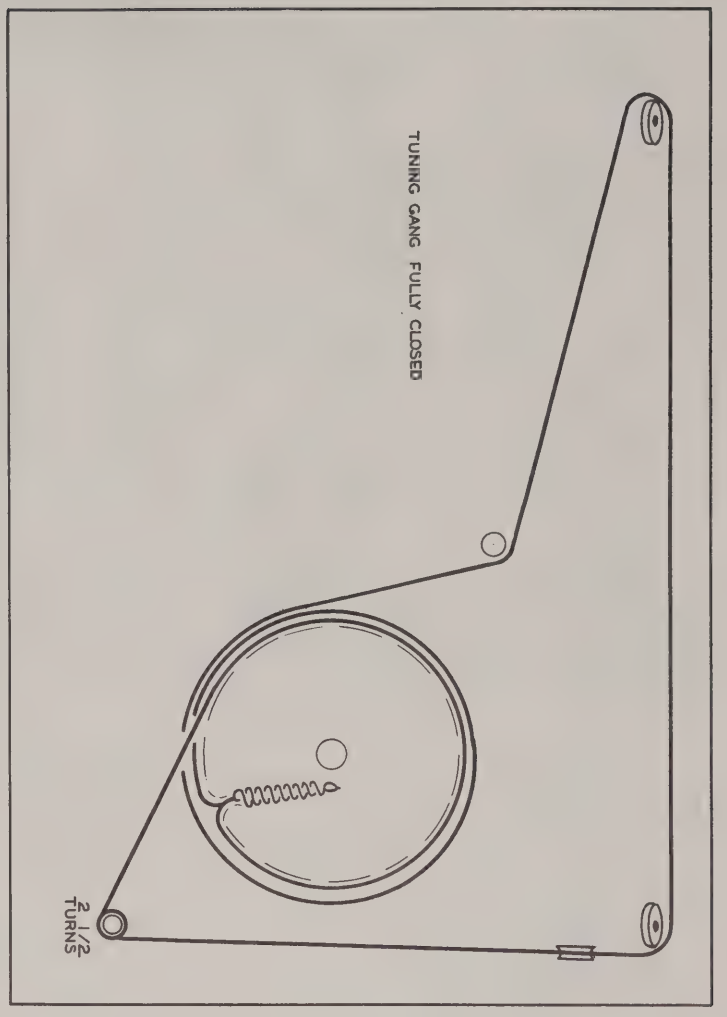
Note 1. Items C23A, C23B And R14 Are Combined Into One Unit, Obtainable Under Manufacturer's Part No. 55-115.

TRANSFORMER (OUTPUT)

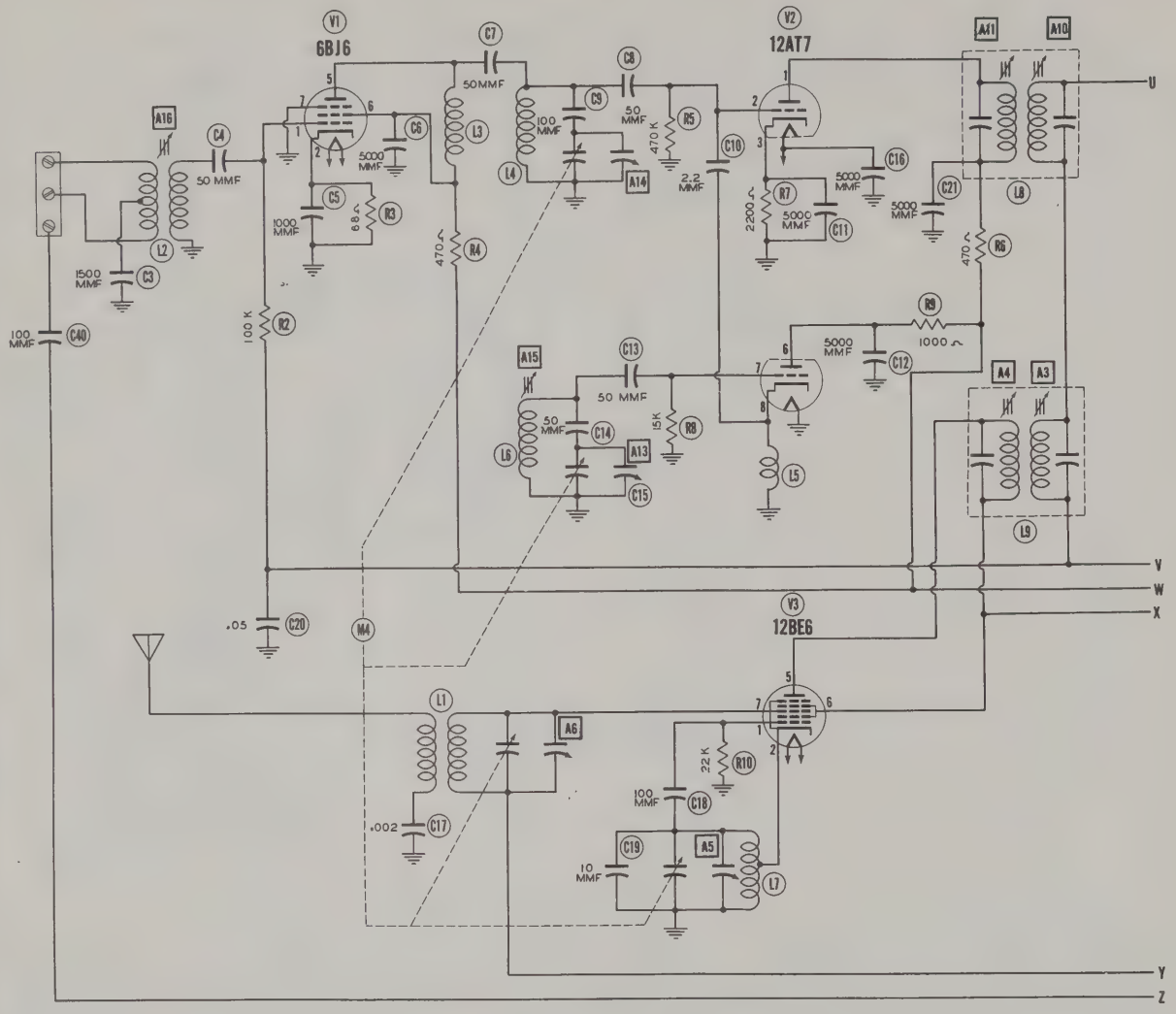
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		REGAL PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2300Ω	3.1Ω	186Ω	.5Ω	Part Of 110-110	A-3876	RO-2	A-2928	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			REGAL PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V.C. IMP.		ST-107†		
SP1	PM	3.1Ω	110-110	MOD-P5-V	5A1†	†Remount Output Transformer
	CONE DIA.	V.C. DIA.				
SP2	4-5/8"	9/16"				



DATE 8/49 4016-14 SET #68 FOLDER #14



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡V1	6BJ6	-.3VDC	.5VDC	48VAC	54VAC	85VDC	85VDC	0V		
‡V2	12AT7	35VDC	0V	2.2VDC	12VAC	0V	65VDC	§-.2VDC	0V	5.1VAC
V 3	12BE6	§-9VDC	0V	24VAC	12VAC	95VDC	95VDC	-.2VDC		
V 4	6BJ6	-.4VDC	0V	54VAC	60VAC	85VDC	85VDC	0V		
V 5	6BJ6	0V	1VDC	60VAC	65VAC	95VDC	95VDC	0V		
‡V6	12AL5	0V	-1VDC	36VAC	24VAC	-6.3VDC	0V	-.4VDC		
V 7	12AT6	-.7VDC	0V	38VAC	48VAC	-.4VDC	-.3VDC	50VDC		
V 8	50L6GT	0V	117VAC	120VDC	95VDC	0V	0V	60VAC	6.4VDC	

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡V1	6BJ6	250KΩ	68Ω	52Ω	58Ω	†1.5KΩ	†1.5KΩ	0Ω		
‡V2	12AT7	†1.5KΩ	470KΩ	2.2KΩ	12Ω	0Ω	†2KΩ	15KΩ	.1Ω	.1Ω
V 3	12BE6	22KΩ	.5Ω	24Ω	12Ω	†1000Ω	†1000Ω	1.5 Meg.		
V 4	6BJ6	1.5 Meg	0Ω	58Ω	64Ω	†2KΩ	†2KΩ	0Ω		
V 5	6BJ6	.5Ω	68Ω	64Ω	70Ω	†1000Ω	†1000Ω	0Ω		
‡V6	12AL5	0Ω	22KΩ	37Ω	24Ω	Inf.	0Ω	Inf.		
V 7	12AT6	10 Meg.	0Ω	38Ω	52Ω	470KΩ	150KΩ	†220KΩ		
V 8	50L6GT	0Ω	120Ω	†370Ω	†1060Ω	470KΩ	0Ω	70Ω	150Ω	

†Measured From Output Of M3

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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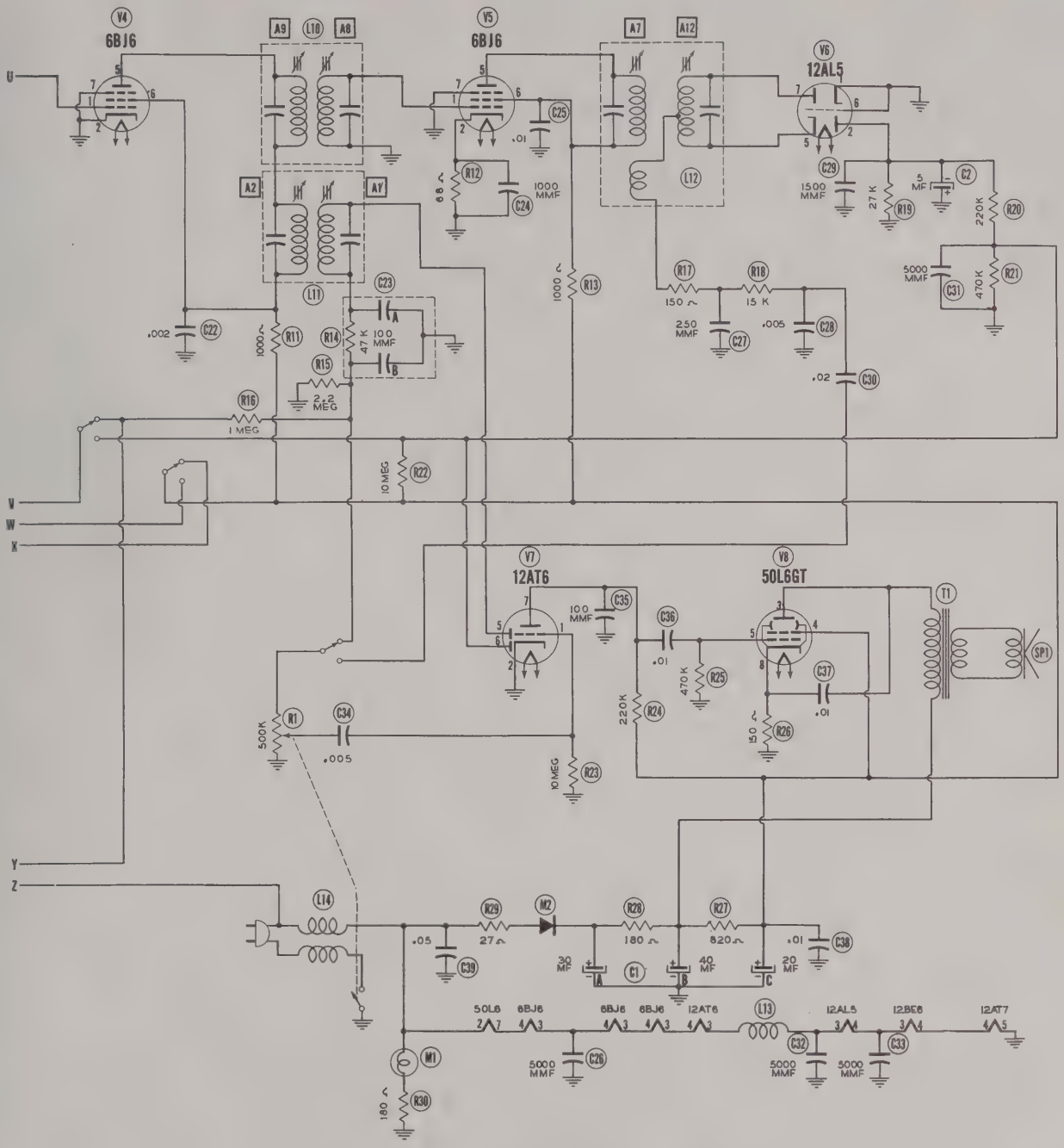

THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF=455 KC AM

IF=10.7 MC FM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn tuning gang fully open and set the right hand edge of the pointer saddle to the indentation mark which is located approx. 2 inches to the left of the right hand edge of the dial backplate.

Use isolation transformer if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (Grid) of 12BE6 (V3). Low side to chassis.	455KC	AM (CCW Position)	Tuning gang fully open	Across voice coil	A1,A2, A3,A4	Adjust for max. output. If isolation transformer is not used reduce dummy ant. to .001MFD to reduce hum modulation.
2.	.05MFD	"	1650KC	"	"	"	A5	Adjust for max. output.
3.		Loop (Radiated)	1400KC	"	Tune for max. signal	"	A6	" " " "

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 5%) resistors in series between pin 2 of 12AL5 (V6) and chassis. The junction of these two resistors is alignment point B as indicated on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.05MFD	High side to pin 1 (Grid) of 6BJ6 (V4). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC Probe to Point (A) Common to chassis.	A7,A8, A9	Adjust for max. deflection.
5.	.05MFD	High side to pin 2 (Grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A10, A11	"
6.	.05MFD	"	"	"	"	DC Probe to Point (C) Common to Point (B)	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.05MFD	High side to pin 1 (Grid) of 6BJ6 (V4). Low side to chassis.	10.7MC (450KC Sweep)	FM	Point of non-interference	Vert.Amp. to Point (A) Low side to chassis.	A7,A8, A9	Disconnect stabilizer cap C2. Adjust for max. amplitude and symmetry as per Fig 1.
5.	.05MFD	High side to pin 2 (Grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A10, A11	Adjust for max. amplitude & symmetry as per Fig 1. Reconnect stabilizer cap (C2).
6.	.05MFD	"	"	"	"	Vert.Amp. to Point (C) Low side to chassis.	A12	Adjust so crossover point occurs at center of pattern as per Fig 2. Retouch A7 for max. amplitude and straightness of the crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Two125Ω carbon res.	Across FM ant. terminals #1 & 2 with 125Ω res. in each generator lead.	108MC (Unmod.)	FM	108MC	DC Probe to Point (A) Common to chassis.	A13	Adjust for maximum deflection.
8.	"	"	106MC (Unmod.)	"	Tune for max. signal	"	A14	"
9.	"	"	90MC	"	90MC	"	A15, A16	Adjust for maximum deflection. Repeat steps 7 and 8.

FIG. 1

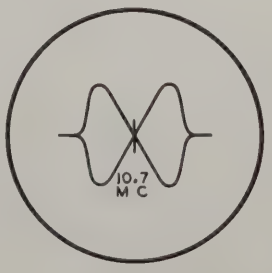
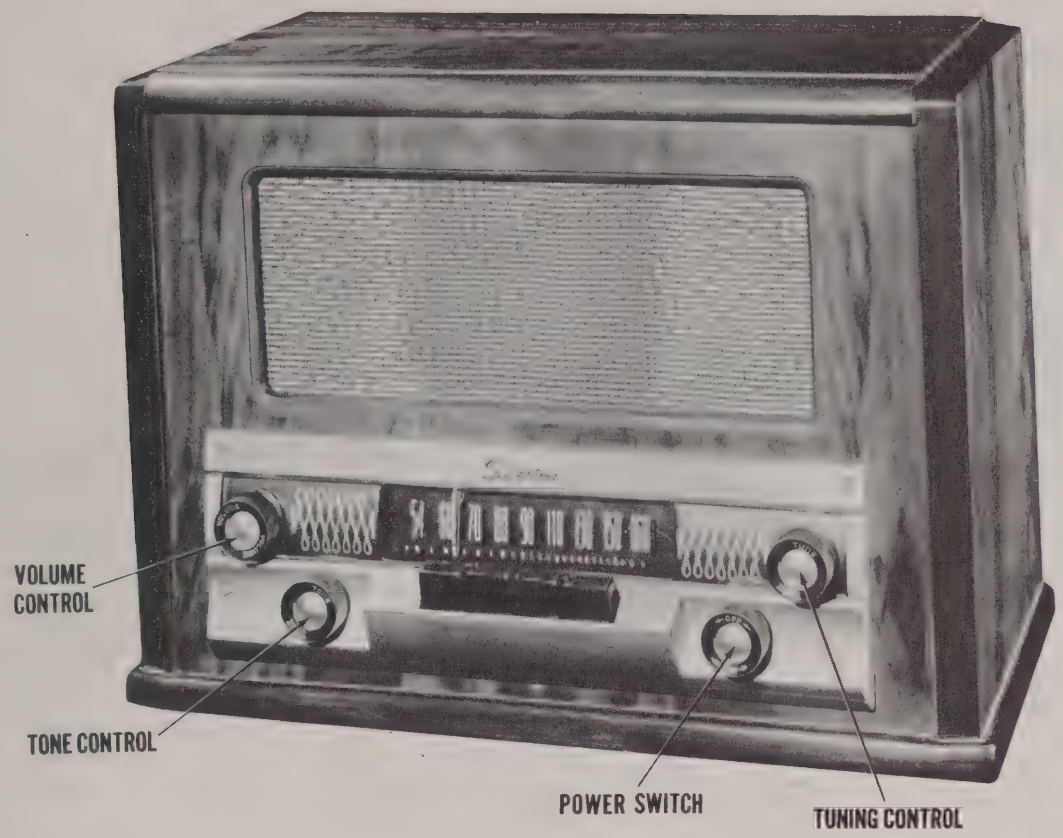


FIG. 2

SILVERTONE MODELS 8052 (Ch. 101.808-1C) 8053 (Ch. 101.808-1D

SILVERTONE MODELS 8052 (Ch. 101.808-1C) 8053 (Ch. 101.808-1D



SILVERTONE MODELS 8052 (Ch. 101.808-1C) 8053 (Ch. 101.808-1D

SILVERTONE MODEL 8052

TRADE NAME	Silvertone, Models 8052 (Ch. 101.808-1C), 8053 (Ch. 101.808-1D)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Illinois
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types 7B7 RF Amp., 14Q7 Converter, 7B7 IF Amp., 7C6 DET.-AVC-AF, 50A5 Power Output, 35Y4 Rectifier
POWER SUPPLY	110-120 Volts AC RATING: .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

Use isolation transformer if available. If not, connect a capacitor in series with low side of of signal generator and B-.

Volume control should be at maximum. Output of signal generator should be no higher than necessary to obtain an output reading.

Maintain loop in same relative position to chassis as when receiver is in cabinet. Use insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (Grid) 14Q7. Low side to B-.	455KC	Tuning cap closed.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	200MMFD	High side to ext. ant. term. Low side to chassis.	1500KC	1500KC	"	A5	Adjust for maximum output.
3.	200MMFD	"	"	Tune for maximum output.	"	A6, A7	Adjust for maximum output. Repeat last three steps until no increase in output is obtained.

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PARTS LIST AND DESCRIPTIONS (Continued)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	7B7	7B7	8V	
V2	Converter	14Q7	14Q7	8AL	
V3	IF Amp.	7B7	7B7	8V	
V4	DET.-AVC-Audio Amp.	7C6	7C6	8W	
V5	Power Output	50A5	50A5	6AD	
V6	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	R60416	AF88D4A	UP4415C		DY-305	EL-352	■ Filter
B	40	150							▲ Filter
C	20	25							Output Cath. Bypass
C2	.001	600		P688-001	GT6D1	GP2L-001	ST-6-001	TM-21	Ant. Coupling
C3	100	500		1468-0001	5W5T1	GP1K-100	M0.5-31	1FM-31	RF Coupling
C4	100	500		1468-0001	5W5T1	GP1K-100	M0.5-31	1FM-31	Osc. Grid Cap.
C5	.01	600		P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	Tuning Cap. Isolation
C6	.05	200		P288-05	GT2S5		ST-4-05	TM-15	AVC Filter
C7	.05	200		P288-05	GT2S5		ST-4-05	TM-15	RF Bypass
C8	.005	600		P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C9	.01	400		P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Tone Comp.
C10	.005	600		P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C11	100	500		1468-0001	5W5T1	GP1K-100	M0.5-31	1FM-31	AF Plate Bypass
C12	.001	600		P688-001	GT6D1	GP2L-001	ST-6-001	TM-21	Tone Comp.
C13	.005	600		P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C14	.02	600		P688-02	GT6S2		ST-6-02	TM-12	Output Plate Bypass
C15	.1	400		P488-1	GT4P1		ST-4-1	72P2	Line Isolation
C16	.05	600		P688-05	GT6S5		ST-6-05	TM-15	Line Filter

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	2 Meg.	½	R62055	Q13-139X		Volume control
R2	2 Meg.	½	R62302	Q13-139	M-66-Z	Tone control

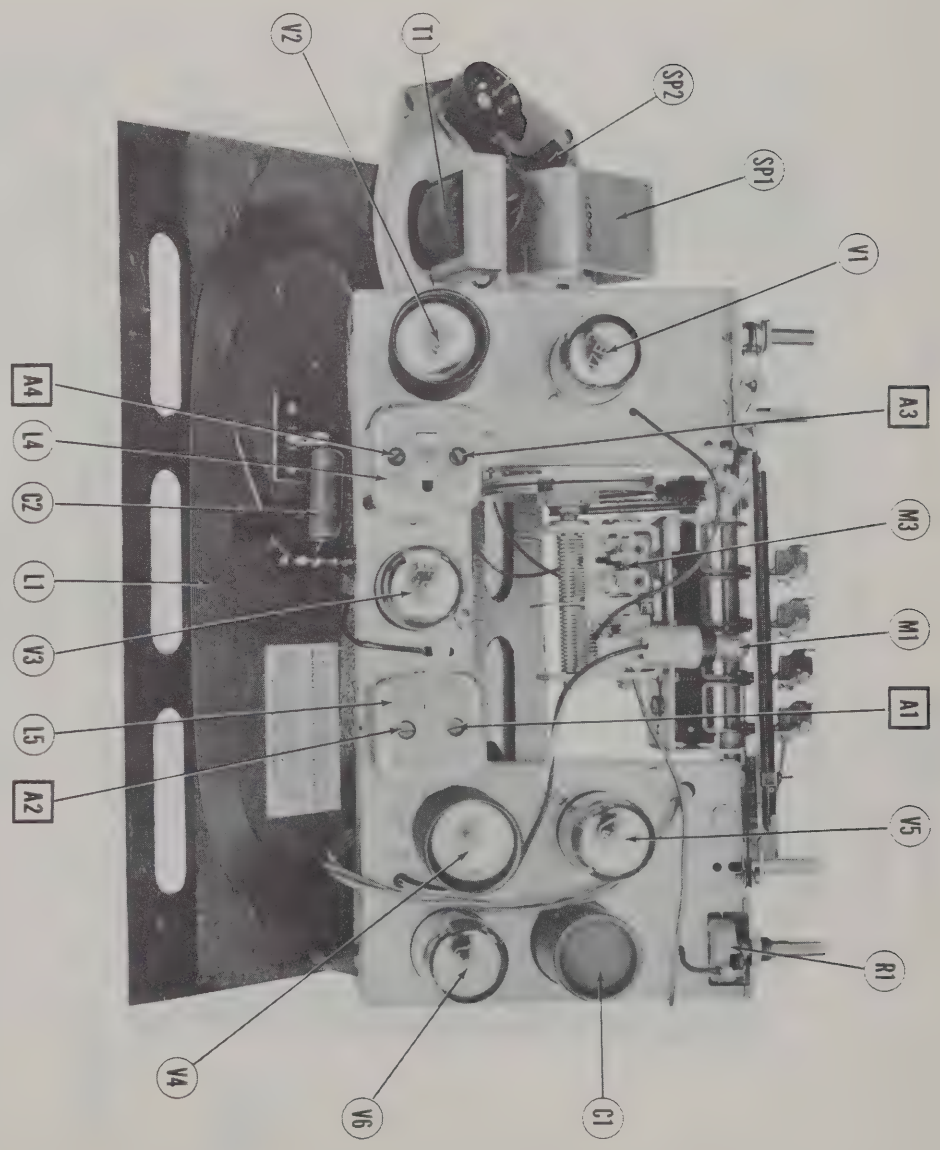
RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES
R3	1 Meg.	½		BTS-1 Meg.	RF Grid
R4	470Ω	½		BTS-470	Parasitic Suppressor
R5	22KΩ	½		BTS-22K	Osc. Grid
R6	2.2 Meg.	½		BTS-2.2 Meg.	AVC Network
R7	47KΩ	½		BTS-47K	Tone Comp.
R8	4.7 Meg.	½		BTS-4.7 Meg.	AF Grid
R9	2.2 Meg.	½		BTS-2.2 Meg.	AF Plate
R10	470KΩ	½		BTS-470K	Output Grid
R11	150Ω	½		BW-½-150	Output Cathode
R12	1200Ω	1		BW-1-1200	Filter
R13	25Ω	1	R40232		Surge Limiter

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
T1	2400Ω	3.2Ω	365Ω Tap @ 13Ω	1.1Ω	R60781	A-3330	RO-3	A-3031	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-803		
SP1	PM	3.2Ω	R60671	MOD.P525-V	52A1 #	# Elongate mounting holes.
	CONE DIA.	V. C. DIA.				
SP2	5 1/16"	9/16"	R60780			

R F COILS

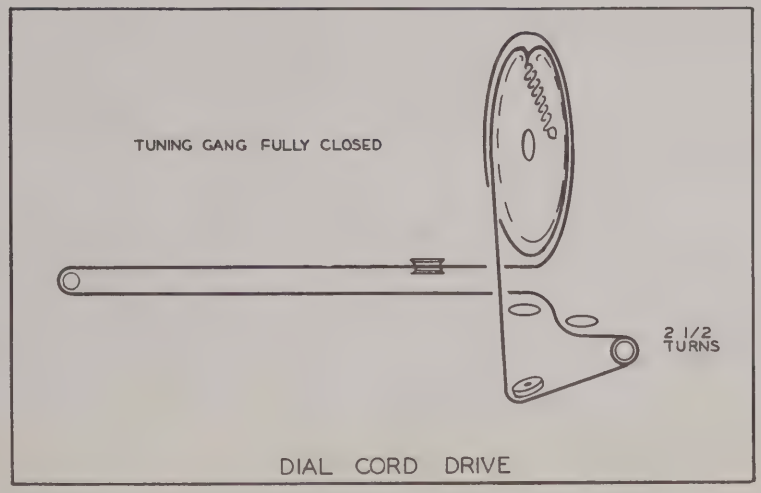
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA MEISSNER PART No.	
L1	Loop Ant.	0Ω	2Ω	R62240		Includes back cover.
L2	RF Coil	2Ω	15Ω	R60465		
L3	Osc. Coil	4.1Ω		R60448	14-1060	
L4	Input IF	10.5Ω	11Ω	R60417	16-6658	
L5	Output IF	11Ω		R60418	16-6670	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA SILVERTONE PART No.		NOTES
M1	Bayonet	6-8V	.15A	Brown			Type #47

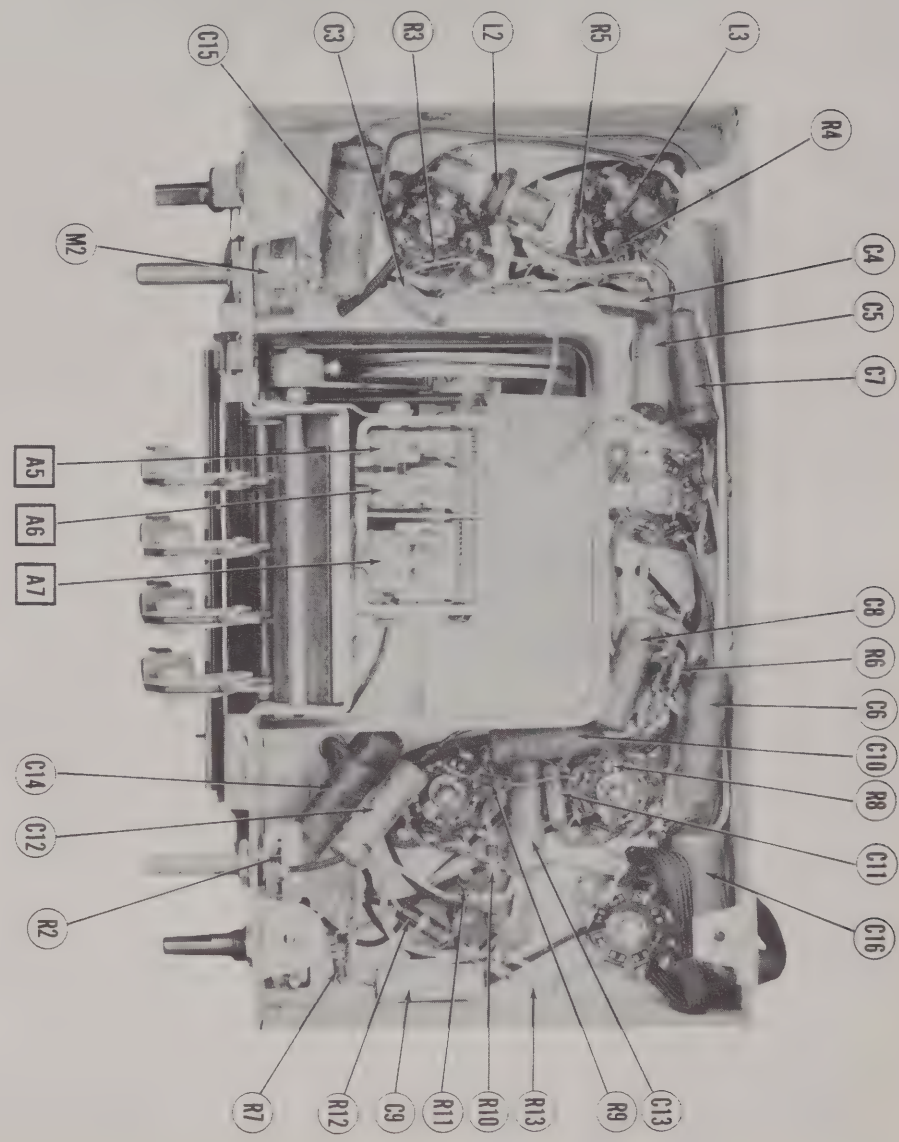
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M2	Switch	R60432	On-Off
M3	3 Gang Var. Cap.	R60413	(15-507MMF, 13-250MMF, 13-88MMC)
	Dial Scale	R62192	
	Dial Pointer	R62187	Model 8053
	Dial Pointer	R62057	Model 8052
	Knob	R62531	Volume
	Knob	R62532	Tone
	Knob	R62533	On-Off
	Knob	R62712	Tuning



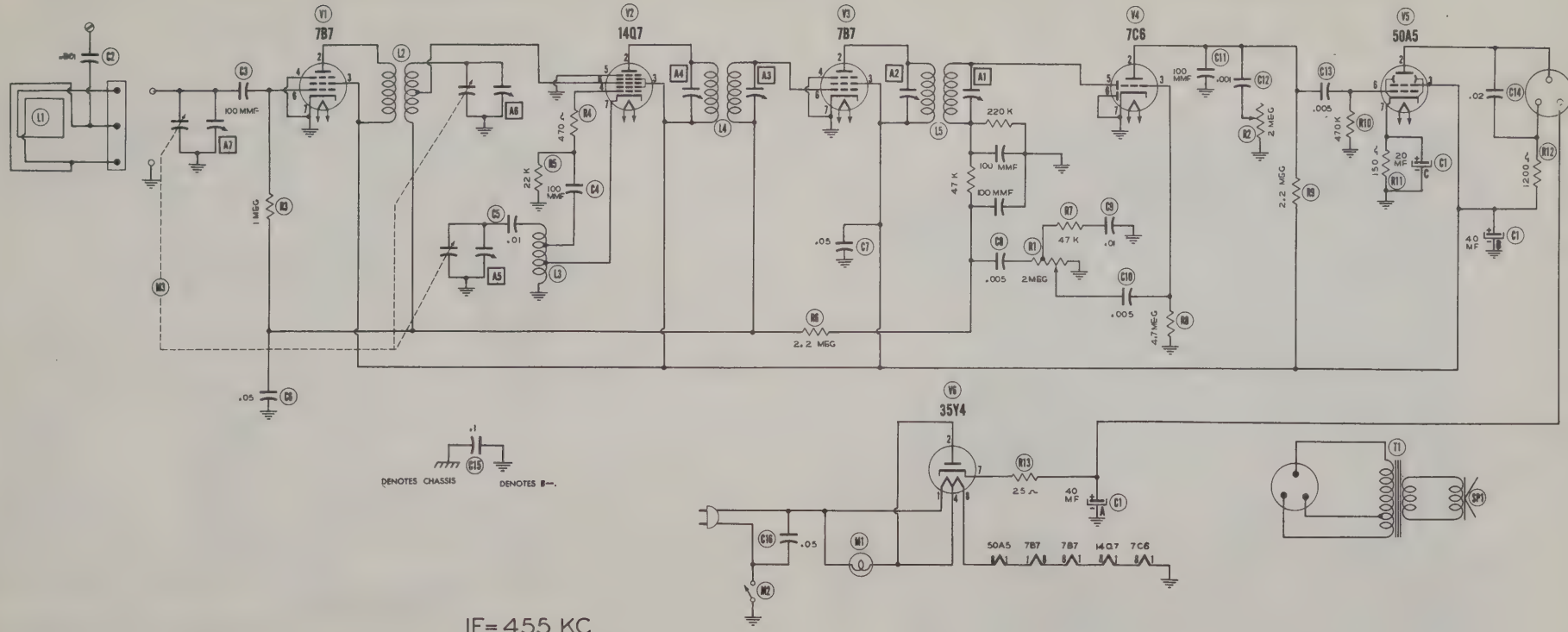
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



SILVERTONE MODEL 8052

SILVERTONE MODEL 8052



IF = 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7B7	20VAC	77VDC	77VDC	0V	0V	-.4VDC	0V	27VAC
V 2	14Q7	7VAC	77VDC	77VDC	§-3.3VDC	0V	0V	0V	20VAC
V 3	7B7	34VAC	77VDC	77VDC	0V	0V	-1.4VDC	0V	27VAC
V 4	7C6	0V	22VDC	-.6VDC	0V	-.5VDC	0V	0V	7VAC
V 5	50A5	34VAC	100VDC	103VDC	22VDC	0V	0V	5VDC	85VAC
V 6	35Y4	117VAC	110VAC	0V	110VAC	0V	0V	115VDC	85VAC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7B7	20Ω	†1.3KΩ	†1.3KΩ	0Ω	0Ω	3.5 Meg.	0Ω	27Ω
V 2	14Q7	7Ω	†1.3KΩ	†1.3KΩ	22KΩ	0Ω	2.5 Meg.	0Ω	20Ω
V 3	7B7	34Ω	†1.3KΩ	†1.3KΩ	0Ω	0Ω	2.5 Meg.	0Ω	27Ω
V 4	7C6	0Ω	†2.2 Meg.	4.7 Meg.	0Ω	220KΩ	0Ω	0Ω	7Ω
V 5	50A5	34Ω	†380Ω	†1.3KΩ	2.2 Meg.	400KΩ	470KΩ	150Ω	85Ω
V 6	35Y4	120Ω	100Ω	Inf.	110Ω	0Ω	Inf.	60KΩ	85Ω

†Measured From Pin 7 Of V6.

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4916-15

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

STROMBERG-CARLSON
MODEL TV-125 (CHASSIS TV-12)

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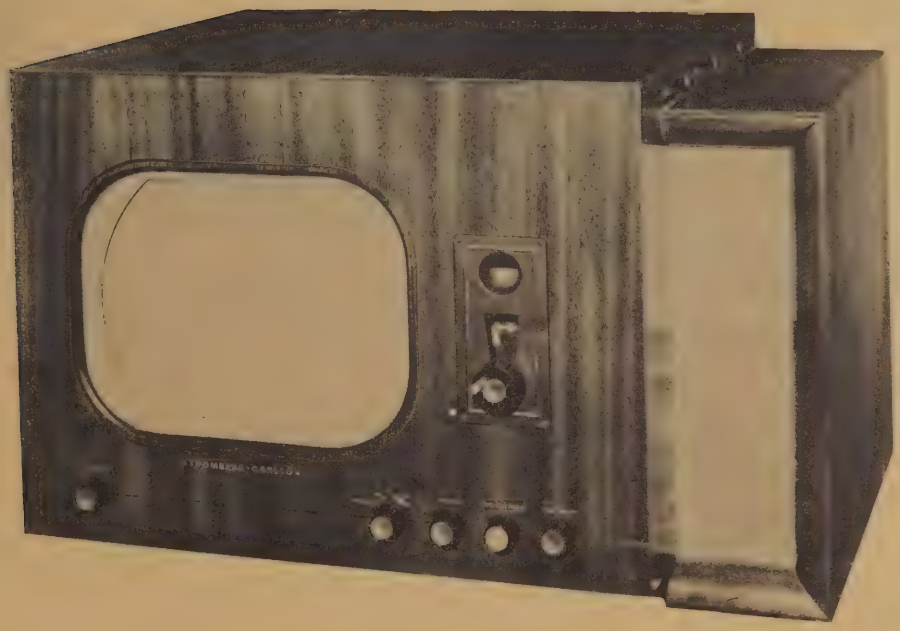

STROMBERG-CARLSON
MODEL TV-125 (CHASSIS TV-12)

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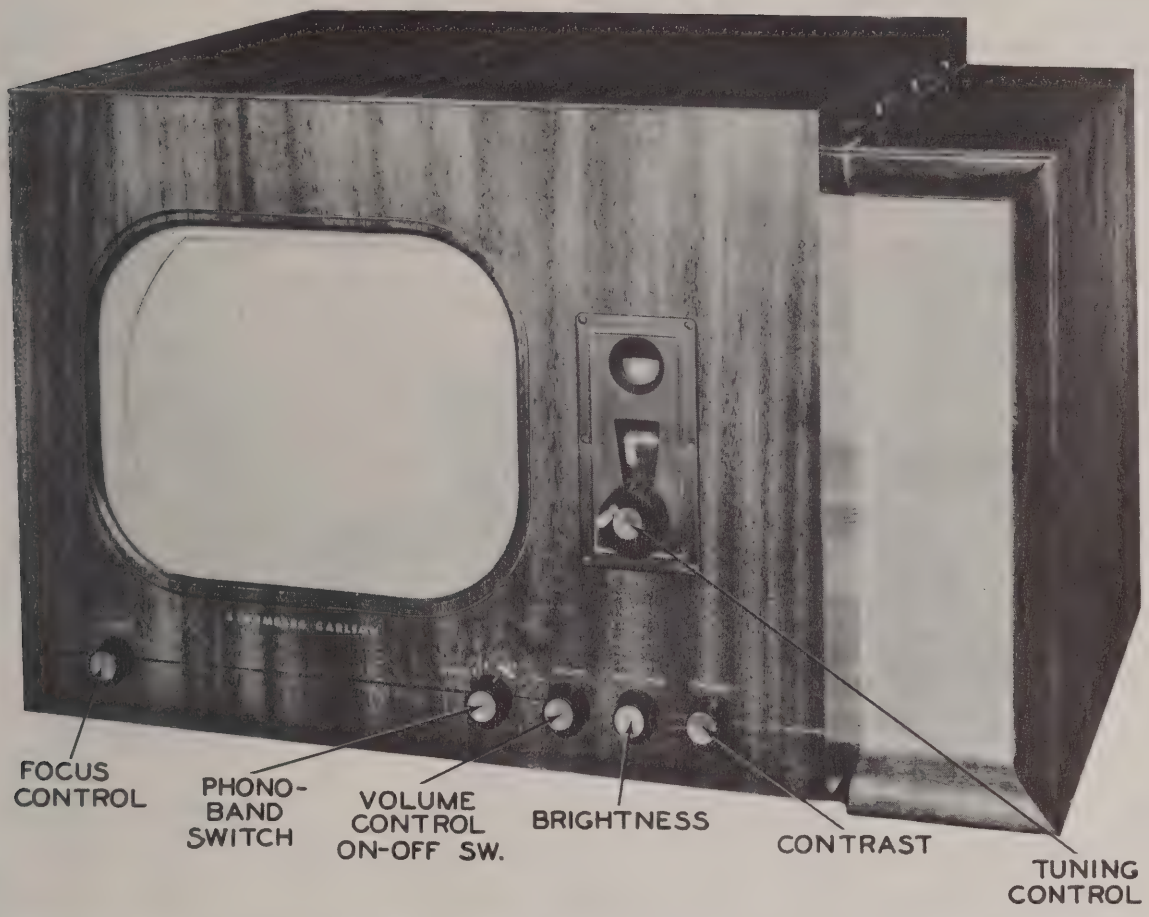
STROMBERG CARLSON MODEL TV-125 (CH. TV12)



STROMBERG CARLSON MODEL TV-125 (CH. TV12)

STROMBERG-CARLSON MODEL TV125S-H2H

TRADE NAME	Stromberg-Carlson Model TV-125 (Chassis TV-12)
MANUFACTURER	Stromberg-Carlson Co., 100 Carlson Rd., Rochester 3, New York
TYPE SET	Television-FM receiver
TUBES	Twenty-eight
POWER SUPPLY	105-130 Volts, 60 Cycles AC RATING: 2.6 Amps. @ 117 Volts
TUNING RANGE—	44-217MC

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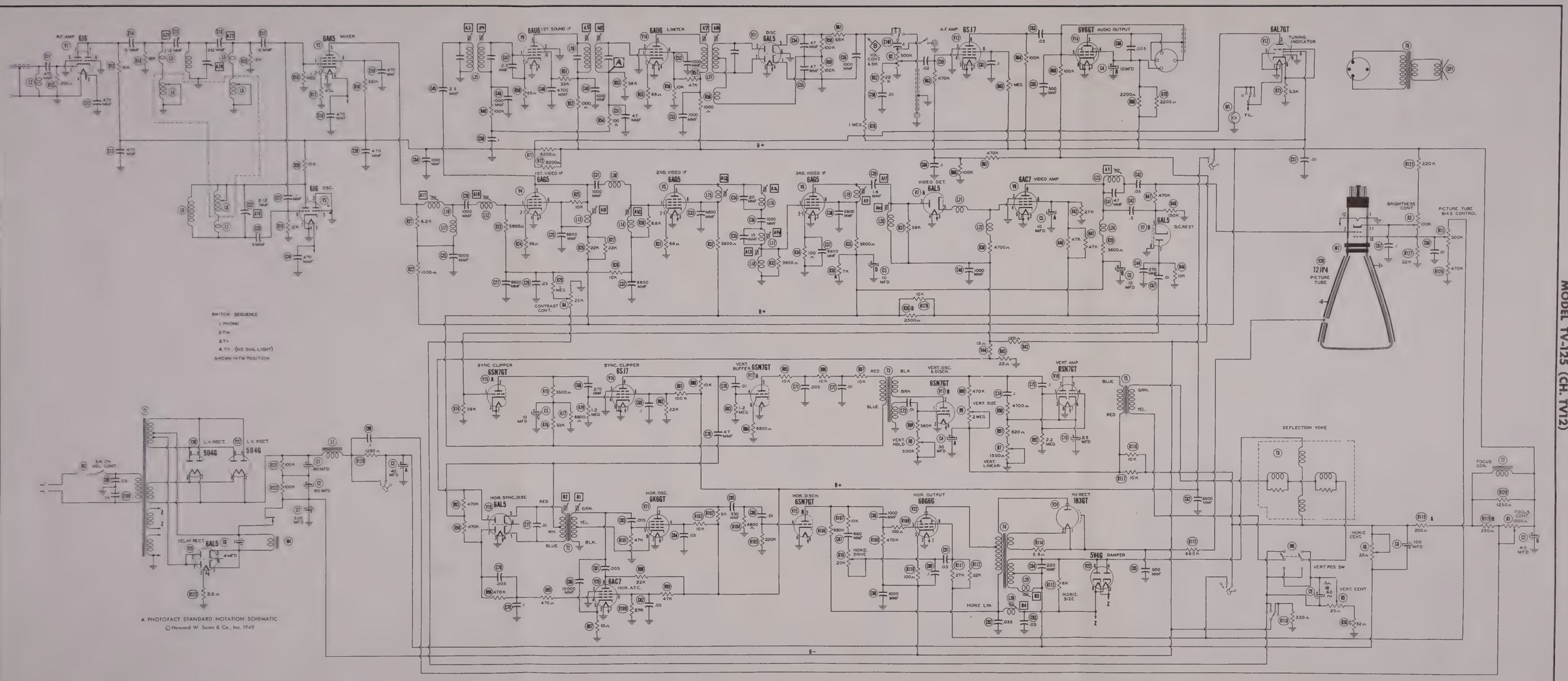
DATE 8/49 4916-16 SET #68 FOLDER 16


STROMBERG CARLSON
MODEL TV-125 (CH. TV12)
R.F. AMP 6J6
6AK5 MIXER
6J6 OSC.
6AU6 1ST SOUND IF
6AU6 LIMITER
DISC 6AL5
A.F. AMP 6S17
6V6GT AUDIO OUTPUT
6AL7GT TUNING INDICATOR
1ST VIDEO IF 6AG5
2ND. VIDEO IF 6AG5
3RD. VIDEO IF 6AG5
VIDEO DET. 6AL5
6AC7 VIDEO AMP
D.C. REST 6AL5
12JP4 PICTURE TUBE
BRIGHTNESS CONT
PICTURE TUBE BIAS CONTROL
CONTRAST CONT.
SYNC. CLIPPER 6SN7GT
SYNC. CLIPPER 6SJ7
VERT. BUFFER 6SN7GT
VERT. OSC. & DISCH. 6SN7GT
VERT AMP 6SN7GT
VERT. SIZE
VERT. HOLD
VERT. LINEAR
DEFLECTION YOKE
HOR. SYNC. DISC 6AL5
HOR. OSC. 6K6GT
HOR. A.F.C. 6AC7
HOR. DISCH. 6SN7GT
HOR. OUTPUT 6BG6G
HV RECT 1B3GT
5V4G DAMPER
HORIZ. DRIVE
HORIZ. SIZE
HORIZ LIN.
HORIZ CENT.
VERT POS SW
VERT. CENT.
FOCUS COIL
FOCUS CONT
SW. ON VOL. CONT.
L.V. RECT. 5U4G
L.V. RECT. 5U4G
DELAY RECT. 6AL5
SWITCH SEQUENCE
1. PHONO
2. F.M.
3. T.V.
4. T.V. (NO DIAL LIGHT)
SHOWN IN F.M. POSITION
B+
B-
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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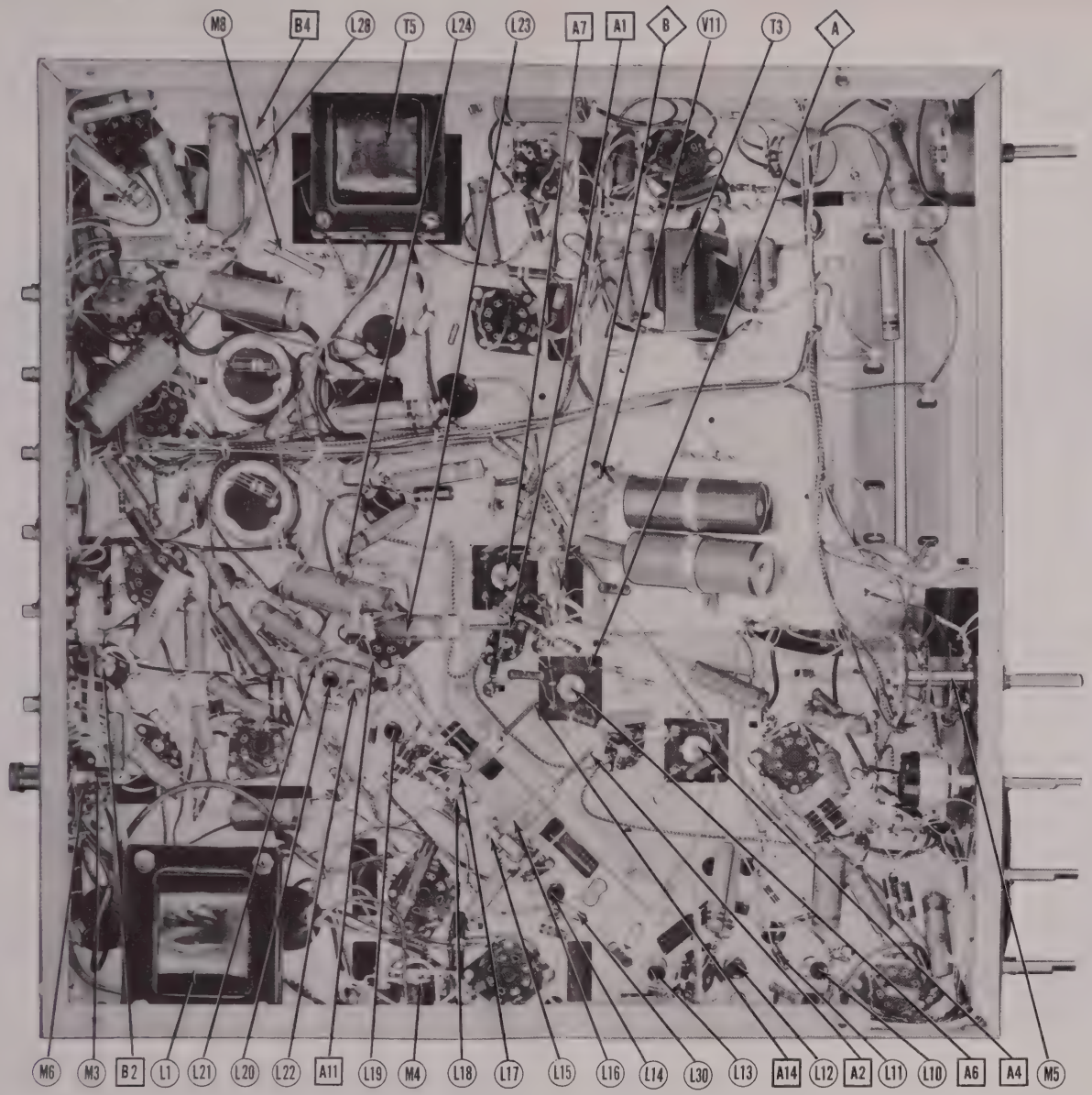
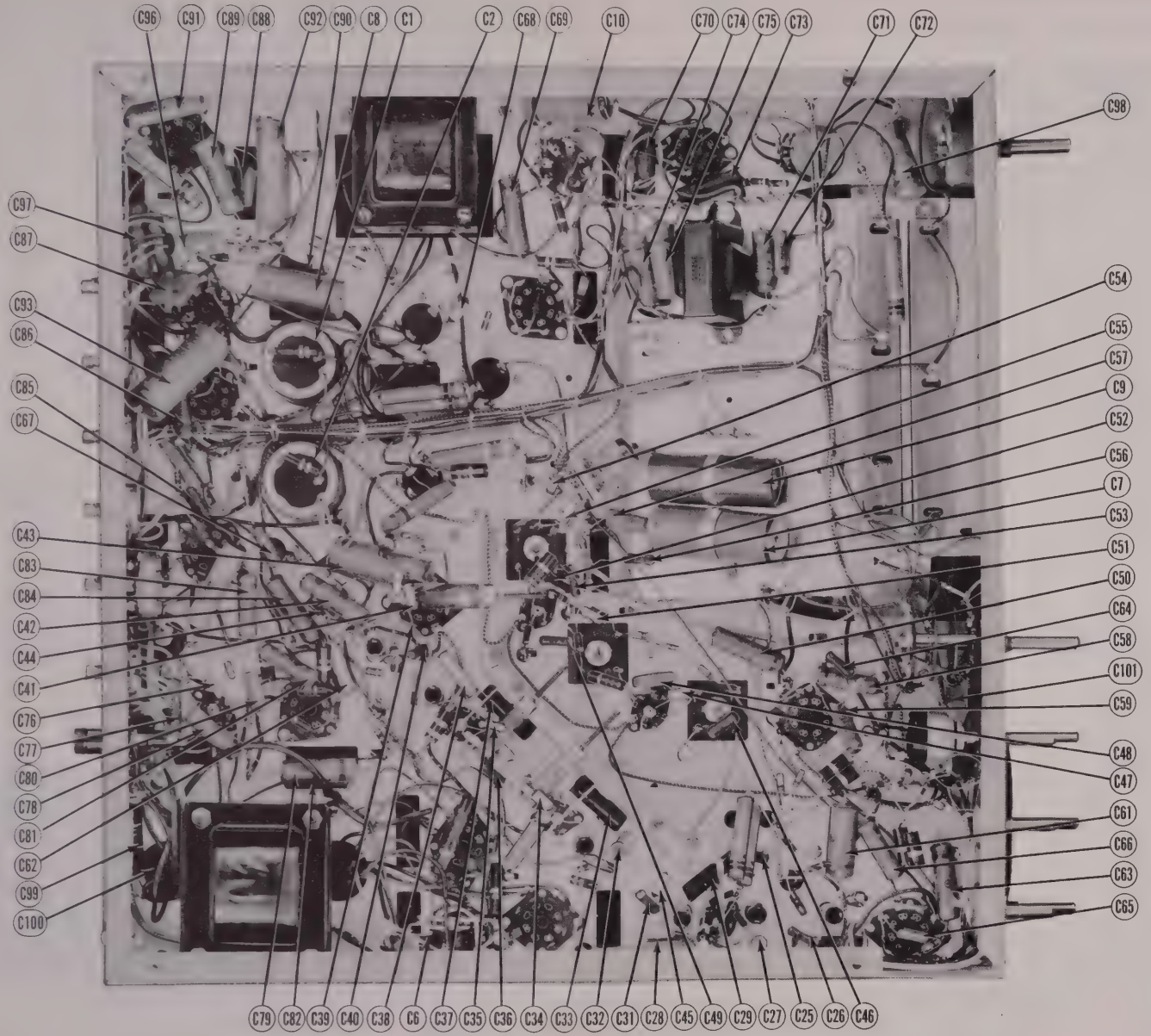
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Before attempting alignment, it is recommended to disable the high voltage to eliminate the shock hazard by removing the 6K6GT horizontal oscillator (V21).

SOUND & TRAP ALIGNMENT

Remove the local oscillator tube (V3) to prevent spurious oscillations from giving a false indication during both the sound and video IF alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.05MFD	High side to pin 4 (Grid) of 6AC7 (V8). Low side to chassis.	4.5MC (400∿ Mod)	Any	DC Probe to Pin 2 (Grid) of 12JP4 pix tube (V28). Common to chassis.	A1	Adjust for minimum deflection. (Keep brightness control reduced during steps 1 & 2.)
2.		High side to ungrounded shield floating over 6AK5 mixer tube (V2). Low side to chassis.	21.9MC (400∿ Mod)	"	"	A2,A3	Adjust for minimum deflection.
3.		"	"	"	DC Probe to Point (A) Common to chassis.	A4,A5, A6	Adjust for maximum deflection.
4.		"	"	"	DC Probe to Point (B) Common to chassis.	A7,A8	Detune A8. Adjust A7 for maximum deflection. Then adjust A8 for zero reading. A positive and negative reading will be obtained on either side of the correct zero setting.

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.05MFD	High side to pin 1 (Grid) of 6AG5 (V6). Low side to chassis.	24MC (10MC Sweep)	22.8MC 26.4MC	Any	Vert.Amp. to pin 2 of Pix Tube (V28). Low side to chassis.	A9,A10, A11	Adjust for maximum amplitude and symmetry as per Fig 1. It may be necessary to slightly adjust the spacing of the gimmick A11 to obtain the proper band pass.
6.	.05MFD	High side to pin 1 (Grid) of 6AG5 (V5). Low side to chassis.	"	"	"	"	A12,A13 A14	Adjust for maximum amplitude and wave form as per Fig 2.
7.	.05MFD	High side to pin 1 (Grid) of 6AG5 (V4). Low side to chassis.	"	"	"	"	A15,A16	Adjust for maximum amplitude and waveform as per Fig 3.
8.		High side to ungrounded tube shield floating over 6AK5 mixer tube (V2). Low side to chassis.	"	"	"	"	A17,A18	Adjust for maximum amplitude and waveform as per Fig 4.

OSCILLATOR ALIGNMENT

Alignment of the oscillator and RF amplifier circuits will necessitate the construction of a dummy shield for the tuner as shown in Fig 5 and follow the instructions below.

(a) Unsolder the blue lead from L10 beneath the chassis.
(b) Remove the RF tuner mounting screws.
(c) Remove the bottom shield from the tuner and replace it with the dummy shield shown in Fig 5.
(d) Remount the tuner on the chassis.
(e) Reconnect the blue lead to L10.
(f) Check the dial setting on the shaft. With the shaft in the full clockwise position, the top window of the rear dial and the number "13" on the front dial should be directly above over the vertical centerline of the tuning shaft.
(g) The sound IF channel must be accurately aligned before aligning the oscillator circuits.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	Direct	Across antenna terminals with high side to the ungrounded antenna terminal.	71.75MC	4	DC Probe to Point (B) Common to chassis.	A19	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
10.	"	"	215.75MC	13	"	L7	Expand or compress the coil turns for zero reading as obtained in the step above.
11.	"	"	209.75MC	12	"		Check all other channels to see that the zero reading is obtained at the correct dial setting when the sound carrier signal for the individual channels is being fed into the receiver.
			203.75MC	11			
			197.75MC	10			
			191.75MC	9			
			187.75MC	8			
			179.75MC	7			
			87.75MC	6			
			81.75MC	5			
			65.75MC	3			
			59.75MC	2			

RF AMP ALIGNMENT

Before starting step 12, tune the receiver to channel 3 and obtain a zero VTVM reading at the discriminator output with a 65.75MC input at the antenna as in step 11 under "oscillator alignment".

Before starting step 13, tune the receiver to channel 13 and obtain a zero VTVM reading at the discriminator output with a 215.75MC signal input at the antenna as in step 10 under "oscillator alignment".

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Direct	High side to ungrounded antenna terminal. Low side to chassis.	63MC (10MC Sweep)	61.25MC 65.75MC	3 (See instructions above)	Vert.Amp. to pin 6 (Screen Grid) of 6AK5 (V2). Low side to chassis.	A20,A21 A22	Adjust for waveform similar to Fig 6. The adjustment of A21 & A22 is correct when the "rocking" of A20 causes no appreciable change in the amplitude of the response curve. The dip between the peaks should not exceed 30% of the total amplitude.
13.	Direct	"	213MC (10MC Sweep)	211.25MC 215.75MC	13 (See instructions above)	"	L3, L5	Adjustment of the high freq. end of the tuner is accomplished by the positioning of L3 & L5 to obtain a waveform similar to Fig 6. The bandpass should not exceed 6MC. Slight positioning of capacitors C14 and C17 may be necessary to obtain the desired curve. If adjustments were necessary for step 13, repeat step 12. Repeat steps 12 and 13 until no further improvement can be made.

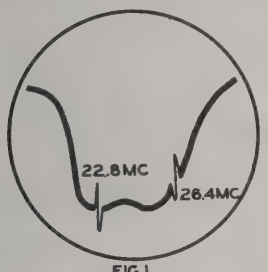


FIG 1

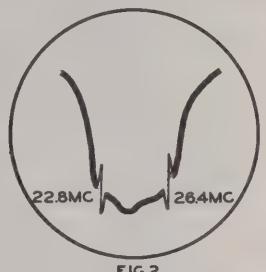


FIG 2

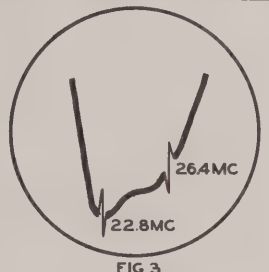


FIG 3

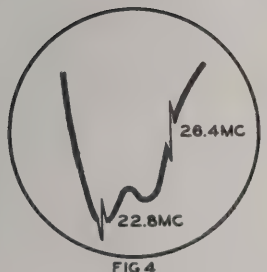


FIG 4

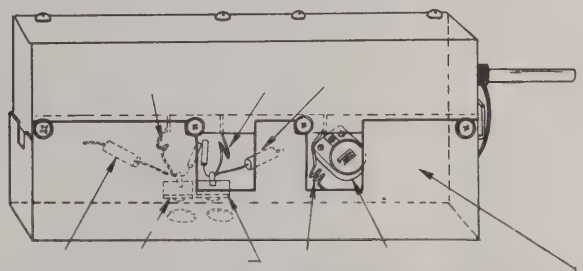

DUMMY SHIELD SHOWING TWO CUT-OUTS, EACH APPROX. 1 INCH SQUARE

FIG 5

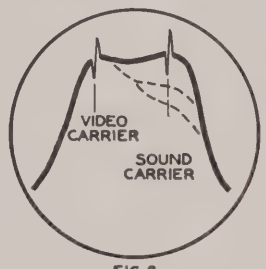
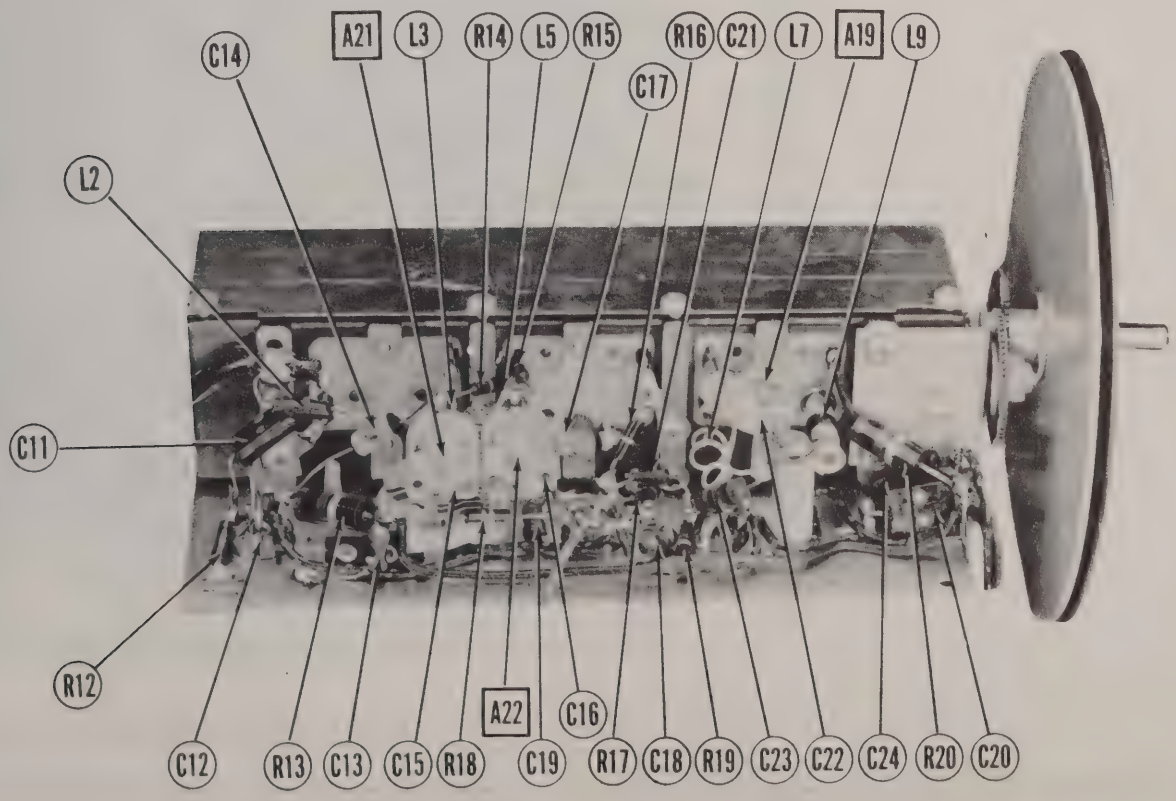
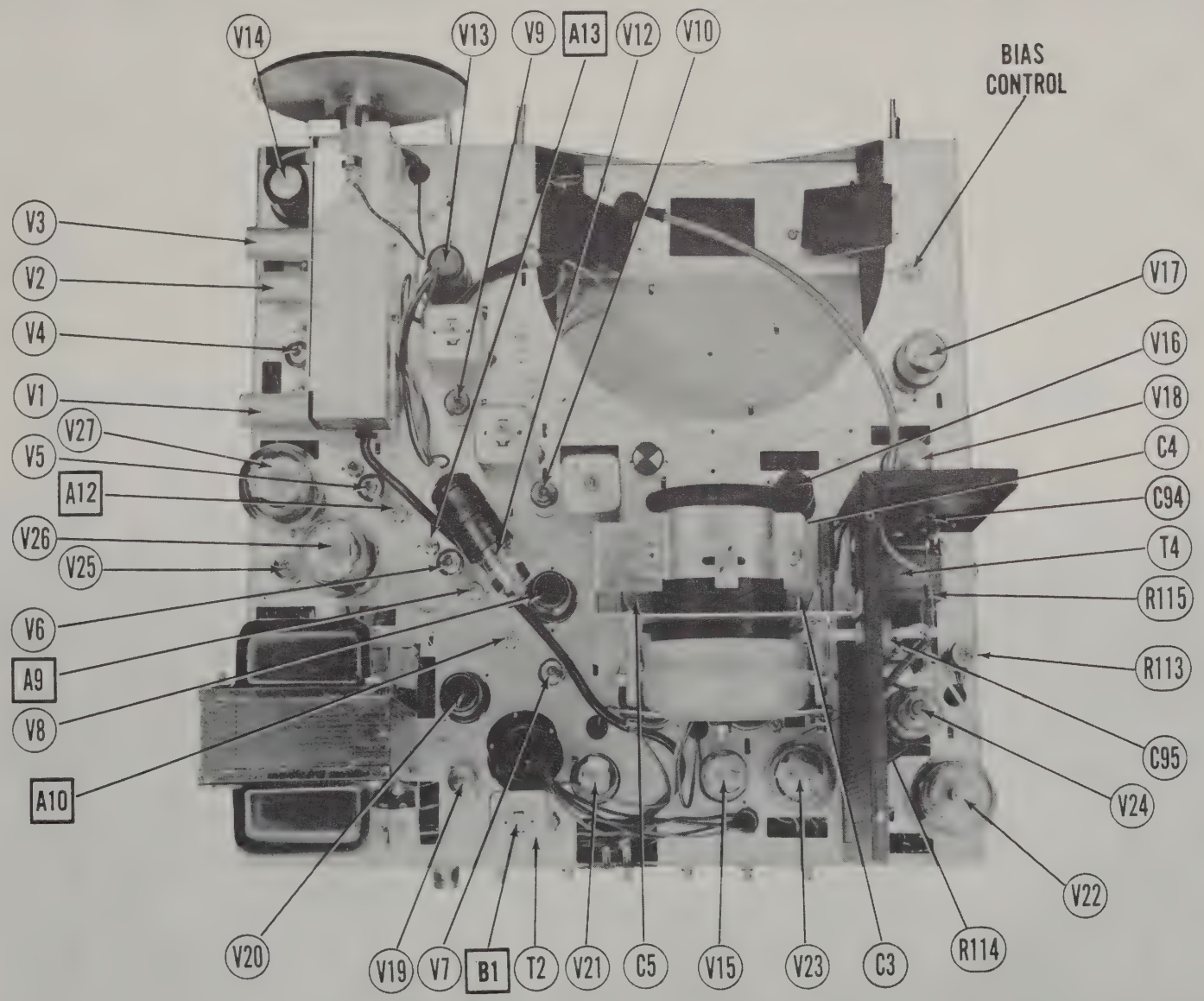


FIG 6

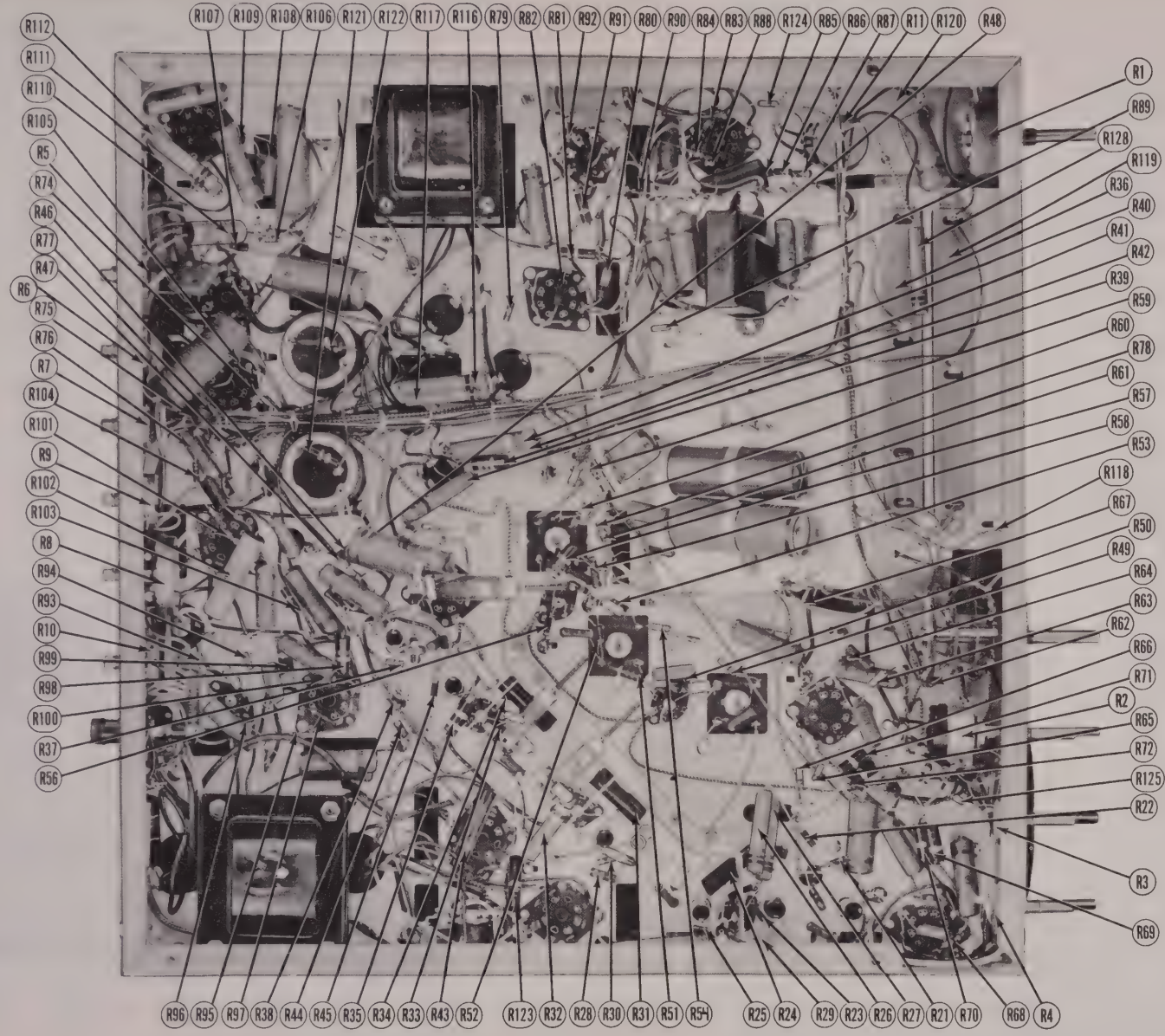


RF TUNER-LEFT SIDE

STROMBERG CARLSON
MODEL TV-125 (CH. TV12)



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	117VDC	117VDC	6.3VAC	0V	0V	0V	0V		
V 2	6AK5	-2.3VDC	.1VDC	0V	6.3VAC	280VDC	50VDC	.1VDC		
V 3	6J6	130VDC	0V	6.3VAC	0V	0V	§-1.5VDC	0V		
V 4	6AG5	-1.7VDC	0V	6.3VAC	0V	280VDC	280VDC	0V		
V 5	6AG5	-1.7VDC	0V	6.3VAC	0V	185VDC	185VDC	0V		
V 6	6AG5	0V	1.2VDC	6.3VAC	0V	137VDC	137VDC	1.2VDC		
V 7	6AL5	.3VDC	-2.6VDC	6.3VAC	0V	-2.5VDC	0V	0V		
V 8	6AC7	0V	6.3VAC	0V	-2.5VDC	0V	140VDC	0V	180VDC	
V 9	6AU6	-.2VDC	0V	0V	6.3VAC	270VDC	150VDC	.8VDC		
V 10	6AU6	-.3VDC	0V	0V	6.3VAC	280VDC	40VDC	.1VDC		
V 11	6AL5	0V	-.6VDC	0V	6.3VAC	-.1VDC	0V	-.6VDC		
V 12	6AL7GT	.9VDC	6.3VAC	210VDC	0V	0V	0V	0V	.9VDC	
V 13	6SJ7	0V	0V	0V	-.6VDC	0V	45VDC	6.3VAC	200VDC	
V 14	6V6GT	0V	6.3VAC	205VDC	235VDC	-7.2VDC	-10VDC	0V	0V	
V 15	6SN7GT	-.3VDC	20VDC	0V	-35VDC	25VDC	0V	0V	6.3VAC	
V 16	6SJ7GT	0V	0V	0V	-.5VDC	0V	45VDC	6.3VAC	265VDC	
V 17	6SN7GT	-36VDC -40VDC	110VDC 225VDC	0V	-1VDC	75VDC	0V	0V	6.3VAC	
V 18	6SN7GT	.1VDC	310VDC	11.5VDC 16.5VDC	.1VDC	310VDC	11.5VDC 16.5VDC	6.3VAC	0V	
V 19	6AL5	.9VDC	-1.6VDC	0V	6.3VAC	-.2VDC	0V	-.8VDC		
V 20	6AC7	0V	0V	0V	-.9VDC	0V	100VDC	6.3VAC	255VDC	
V 21	6K6GT	0V	0V	200VDC	205VDC	-34VDC	285VDC	6.3VAC	.7VDC	
V 22	6BG6G	♦10VDC	0V	♦25VDC	♦-.1VDC	♦-.1VDC	♦390VDC	6.3VAC	♦170VDC	TOP CAP *
V 23	5V4G	90VDC	135VDC	195VDC 380VDC	385VDC	385VDC	385VDC	250VDC	135VDC	
V 24	1B3GT	* DO NOT MEASURE								
V 25	6AL5	45VDC	-10VDC	.5VAC	6.3VAC	45VDC	0V	-10VDC		
V 26	5U4G	-2.6VDC	410VDC	0V	370VAC	-10VDC	370VAC	385VDC	410VDC	
V 27	5U4G	0V	410VDC	0V	370VAC	0V	370VAC	0V	410VDC	
		PIN 1	PIN 2	PIN 10	PIN 11	PIN 12				
V 28	12JP4	0V	.1VDC	175VDC 380VDC	90VDC	6.3VAC				

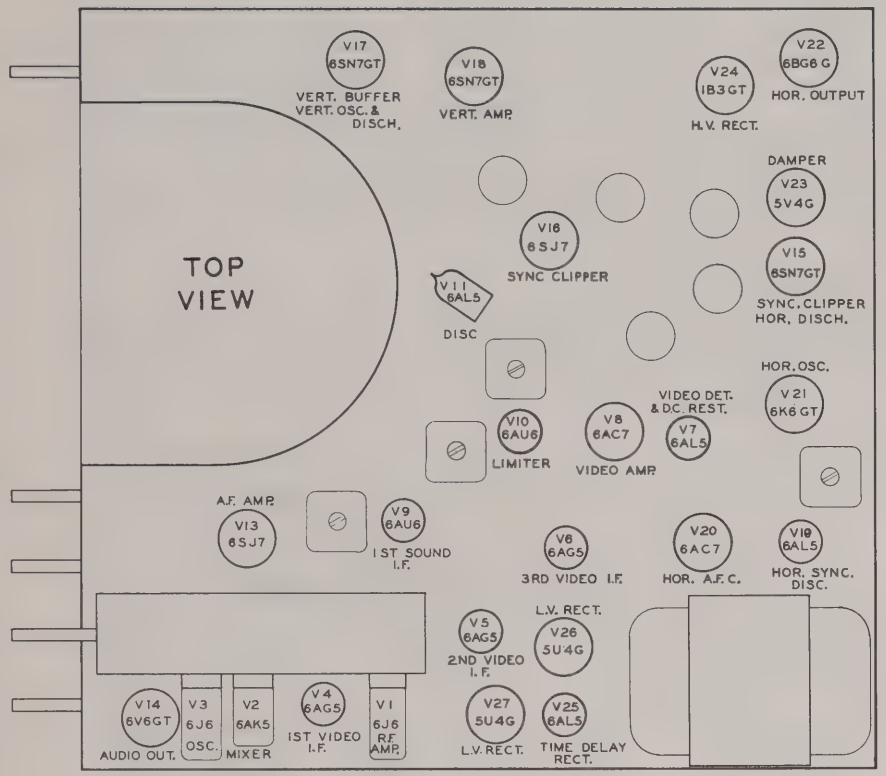
§ Taken with vacuum tube voltmeter.
* Do not measure
♦ Measured from junction of relay and R43
ALL MEASUREMENTS ARE TAKEN IN TV POSITION.

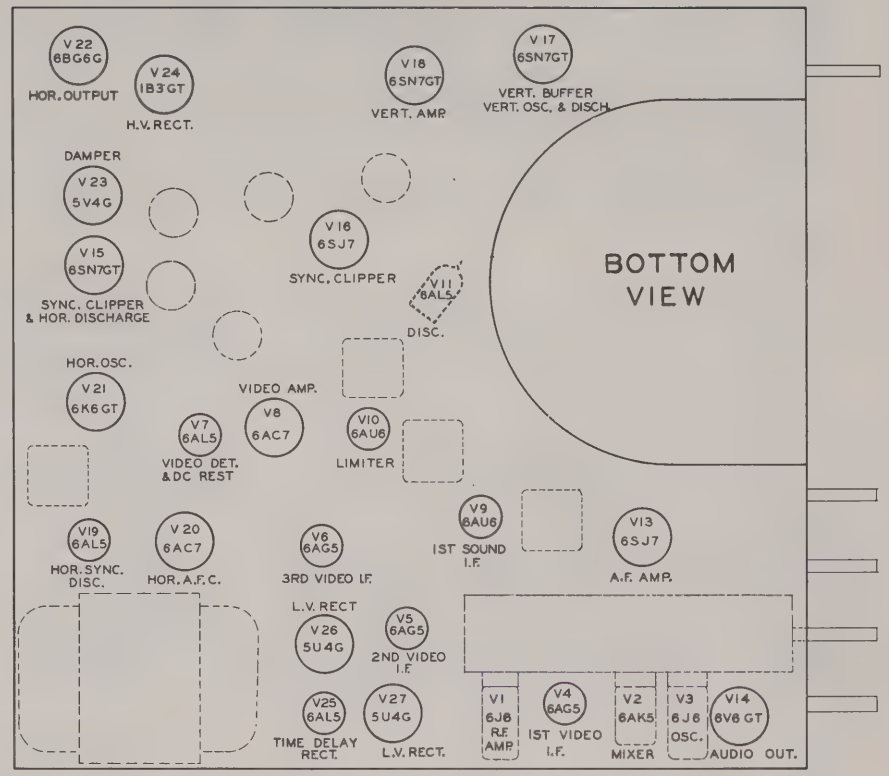
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†15KΩ	†15KΩ	.1Ω	0Ω	0Ω	0Ω	200Ω		
V 2	6AK5	1 Meg.	47Ω	0Ω	.1Ω	†1.5KΩ	†330KΩ	47Ω		
V 3	6J6	†14KΩ	0Ω	.1Ω	0Ω	0Ω	12KΩ	0Ω		
V 4	6AG5	1 Meg.	68Ω	.1Ω	0Ω	†12KΩ	†12KΩ	68Ω		
V 5	6AG5	1 Meg.	68Ω	.1Ω	0Ω	†6KΩ	†6KΩ	68Ω		
V 6	6AG5	.7Ω	100Ω	.1Ω	0Ω	†6KΩ	†6KΩ	100Ω		
V 7	6AL5	150KΩ	35Ω	.1Ω	0Ω	4.7KΩ	0Ω	10KΩ		
V 8	6AC7	0Ω	.1Ω	0Ω	4.7KΩ	0Ω	†13KΩ	0Ω	†6KΩ	
V 9	6AU6	250KΩ	0Ω	0Ω	.1Ω	†1.5KΩ	†34KΩ	68Ω		
V 10	6AU6	56KΩ	0Ω	0Ω	.1Ω	†1.5KΩ	†11KΩ	68Ω		
V 11	6AL5	0Ω	100KΩ	0Ω	.1Ω	200KΩ	0Ω	100KΩ		
V 12	6AL7GT	3.5KΩ	.1Ω	†4.5KΩ	1.5 Meg.	0Ω	0Ω	0Ω	3.5KΩ	
V 13	6SJ7	0Ω	0Ω	0Ω	575KΩ	0Ω	†1 Meg.	.1Ω	†100KΩ	
V 14	6V6GT	0Ω	.1Ω	†2KΩ	†1.5KΩ	100KΩ	55Ω	0Ω	0Ω	
V 15	6SN7GT	40KΩ	†13KΩ	0Ω	220KΩ	†680KΩ	0Ω	0Ω	.1Ω	
V 16	6SJ7GT	0Ω	0Ω	0Ω	1.2 Meg.	0Ω	†25KΩ	.1Ω	†10KΩ	
V 17	6SN7GT	1.2 Meg. 720KΩ	†2.5Meg. †500KΩ	0Ω	1.2Meg.	†32KΩ	0Ω	0Ω	.1Ω	
V 18	6SN7GT	2.2 Meg.	†6KΩ	1000Ω 2.3KΩ	2.2 Meg.	†6KΩ	2.3KΩ 1000Ω	.1Ω	0Ω	
V 19	6AL5	470KΩ	22Ω	0Ω	.1Ω	470KΩ	Inf.	950KΩ	-	
V 20	6AC7	0Ω	0Ω	0Ω	1.5 Meg.	10Ω	†20KΩ	.1Ω	†22KΩ	
V 21	6K6GT	0Ω	0Ω	†6KΩ	†11KΩ	47KΩ	†1000Ω	.1Ω	30Ω	
V 22	6BG6G	0Ω	0Ω	♦100Ω	470KΩ	470KΩ	†95Ω	.1Ω	†13KΩ	TOP CAP †6.5KΩ
V 23	5V4G	200Ω	†6.5KΩ	250KΩ 5.5KΩ	†900Ω	†80Ω	†900Ω	†300Ω	†6.5KΩ	
V 24	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP †6.5KΩ
V 25	6AL5	5.5KΩ	60Ω	2Ω	.1Ω	5.5KΩ	Inf.	60Ω		
V 26	5U4G	35Ω	6KΩ	Inf.	75Ω	55Ω	72Ω	6KΩ	6KΩ	
V 27	5U4G	Inf.	6KΩ	Inf.	75Ω	Inf.	72Ω	Inf.	6KΩ	
		PIN 1	PIN 2	PIN 10	PIN 11	PIN 12				
V28	12JP4	0Ω	550KΩ	250KΩ 5.5KΩ	†5.5KΩ	.1Ω				

† Measured from pin 8 of V26
♦ Measured from junction of relay and R43
ALL MEASUREMENTS TAKEN IN TV POSITION
RELAY MUST BE HELD CLOSED WHEN MEASURING B+ RESISTANCE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.





TUBE PLACEMENT CHART

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STROM. CARL. PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AU6	6AU6	7AD	
V2	Converter	6AB8	6AB8	9AK	
V3	Oscillator	6AJ8	6AJ8	9AK	
V4	1st Video IF	6AG5	6AG5	7BD	
V5	2nd Video IF Amp.	6AU6	6AU6	7BD	
V6	3rd Video IF Amp.	6AU6	6AU6	7BD	
V7	Video Det. & 1st Audio	6AL5	6AL5	6AT	
V8	Video Amp.	6AU6	6AU6	7BD	
V9	1st Sync. Clipper	6AU8	6AU8	9CN	
V10	2nd Sync. Clipper	6AU8	6AU8	9CN	
V11	2nd Audio Amp.	6AL5	6AL5	6AT	
V12	Sync. Ind.	6AL5	6AL5	6AT	
V13	1st Audio Amp.	6SL7	6SL7	7AC	
V14	Sync. Output	6SN7GT	6SN7GT	9AD	
V15	Sync. Clipper	6SN7GT	6SN7GT	9AD	
V16	Horiz. Buffer	6SN7GT	6SN7GT	9AD	
V17	Horiz. Osc.	6SN7GT	6SN7GT	9AD	
V18	Horiz. Sync. Disc.	6AL5	6AL5	6AT	
V19	Horiz. Output	6K6GT	6K6GT	7CS	
V20	Damper	6V4	6V4	5L	
V21	Rect. Doubler	1B3GT	1B3GT	8C	
V22	Horiz. Output Sect.	6AL5	6AL5	6AT	
V23	Rect.	5U4G	5U4G	5T	
V24	Rect.	5U4G	5U4G	5T	
V25	Picture Tube	12AP4	12AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STROM. CARL. PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	68	350	111036	AF16J	UF345			TVL-51	Filter
C2	68	350	111036	AF16J	UF345			TVL-641	"
C3A	40	475	111040	AF40K81	UP9BJ			TVL-64	▲ Filter
B	40	475			39B				▲ Filter
C4A	40	450	111033	AF22GJ1	UP1111			TVL-69	▲ Vert.Osc. Plate Dec.
B	10	450			45T				▲ Output Decoupling
C5A	10	350	111034	AF22J2	UP1111			TVL-34	▲ V. Amp. Screen Byp.
B	10	350			4S				■ Low Pass Filter
C	10	500							▲ Sync. Clip Plate Dec.
D	10	350							3rd V. IF Decoupling
C6	4	150	111042	PRS150/4	BR41S			UT-41	Filter
C7	500	25	111039	PRS25/500	BRM255			TVA-10	Bias Filter
C8	100	25	111041	PRS25/100	BRM254A			TVA-4	Hor.Cent.Cont. Bypass
C9	2000	6	111038	PRS6/2000	BRH620			TVL-43	Vert.Cent.Cont. Bypass
C10	25	50	111037	PRS50/25	BR255			TVA-15	Vert.Output Cath. Byp.
C11	470	500	110511	1468-0005	5W5T5	GP2K-500	MO.5-35	LFM-35	RF Coupling
C12	470		110511	1468-0005	5W5T5	GP2K-500	MO.5-35	LFM-35	Mixer Fil. Bypass
C13	470		110511	1468-0005	5W5T5	GP2K-500	MO.5-35	LFM-35	Mixer Screen Bypass
C14	470		110511			GP2K-500	MO.5-35	LFM-35	RF Bypass
C15	15		11.470			GP1K-15		MS-415	RF Coupling
	2-12		110512			TS2A-N500-2-12			Fixed Padder
C16	2-12		110513			TS2A-N500-2-12			Fixed Padder
C17	15		110470			GP1K-15		MS-415	RF Coupling
C18	470		110511	1468-0005	5W5T5	GP2K-500	MO.5-35	LFM-35	Mixer Fil. Bypass
C19	470		110511	1468-0005	5W5T5	GP2K-500	MO.5-35	LFM-35	Mixer Screen Bypass
C20	470	500	110511	1468-0005	5W5T5	GP2K-500	MO.5-35	LFM-35	RF Bypass
C21			110513						Osc. Coupling
C22	2-12		110512			TS2A-N500-2-12			Fixed Trimmer
C23	8		110514	1468-0000C5	5W5V5	MP0K-5	MO.5-55	MS-55	Osc. Grid Cap.
C24	470	500	110511	1468-0005	5W5T5	GP2K-500	MO.5-35	LFM-35	Osc. Fil. Bypass
C25	.005		110485	1469-001	1W5D1	GP2L-001	MW.5-21	LFM-21	Mixer Plate Dec.
C26	.005		110485	1469-001	1W5D1	GP2L-001	MW.5-21	LFM-21	Bias Filter
C27	.005		110498	1467-008	1D3D7	GP2-335-0075	MW.3-27	LFM-27	Bias Filter
C28	.25	200	110421	P488-25	GT2P25		ST-2-25	TC-2	" "
C29	6800		110498	1467-008	1D3D7	GP2-335-0075	MW.3-27	LFM-27	1st V. IF Screen Byp.
C30	1000		110425	1468-001	1W5D1	GP2L-001	MW.5-21	LFM-21	IF Coupling *
C31	6800		110498	1467-008	1D3D7	GP2-335-0075	MW.3-27	LFM-27	Bias Filter
C32	6800		110498	1467-008	1D3D7	GP2-335-0075	MW.3-27	LFM-27	2nd V. IF Screen Byp.
C34	20		110499		5R542	MP0K-20	MO5.5-42	MS-42	Fixed Trimmer
C35	.15		110462	1469-00001	5R561	MP0K-15	MO5.5-41	MS-41	" "
C36	1000		110485	1468-001	1W5D1	GP2L-001	MW.5-21	LFM-21	IF Coupling
C37	6800		110498	1467-008	1D3D7	GP2-335-0075	MW.3-27	LFM-27	3rd IF Cath. Bypass.
C38	6800		110498	1467-008	1D3D7	GP2-335-0075	MW.3-27	LFM-27	3rd IF Screen Bypass
C39	1.6								IF Coupling
C40	1000		110425	1468-001	1W5D1	GP2L-001	MW.5-21	LFM-21	Diode Filter
C41	47		110503	1469-00005	5R561	MP0M-50	MO5.5-45	MS-45	Fixed Trimmer
C42	.05	400	47652	P487-05	3T455		ST-4-05	TM-15	Video Coupling
C43	.5	400	11.585	484-5	5T4P5		ST-4-5	TC-5	"
C44	27		110506	1468-00025	5W5T25	GP2K-280	MO.5-325	LFM-325	DC Res. Diode Filter
C45	2.2		110490						S. IF Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STROM.CARL. PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C46	1000		110425	1468-001	1W5D1	GP2L-001	MW.5-21	LFM-21	AVC Filter
C47	2.2		110501						Fixed Trimmer
C48	47	500	110273	1467-005	1D5D5	GP2M-005	MW.3-35	LFM-35	1st S. IF Screen Byp.
C49	1000		110425	1468-001	1W5D1	GP2L-001	MW.5-21	LFM-21	1st S. IF Decoupling
C50	.1	200	110415	P288-1	GT2P1		ST-2-1	TM-1	AVC Filter
C51	47			1468-00005	5W545	GP1K-50	MO.5-45	LFM-45	" "
C52	1000		110425	1468-001	1W5D1	GP2L-001	MW.5-21	LFM-21	Limiter Screen Bypass
C53	1000		110425	1468-001	1W5D1	GP2L-001	MW.5-21	LFM-21	Limiter Decoupling
C54	47			1467-0005	5W545	GP1K-50	MO.5-45	LFM-45	RF Bypass
C55	47			1468-00005	5W545	GP1K-50	MO.5-45	LFM-45	" "
C56	1000		110425	1468-001	1W5D1	GP2L-001	MW.5-21	LFM-21	De-emphasis
C57	.01	400	110420	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Tuning Ind. Filter
C58	.01	400	110420	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Tone Compensation
C59	.02	400		P488-02	GT4S2		ST-4-02	TM-12	Audio Coupling
C60	.1	200	110415	P288-1	GT2P1		ST-2-1	TM-1	Bias Filter *
C61	.1	400	25483	P488-1	GT4P1		ST-4-1	TM-1	AF Screen Bypass
C62	680		110498	1467-008	1D3D7	GP2-335-0075	MW.3-27	LFM-27	RF Bypass
C63	.05	400	40632	P488-05	GT4S5		ST-4-05	TM-15	Audio Coupling
C64	1000		110425	1468-001	1W5D1	GP2L-001	MW.5-21	LFM-21	Decoupling
C65	50	500		1468-0006	5W575	GP2K-500	MO.5-35	LFM-35	Output Grid Bypass
C66	.005	600	27760	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Output Plate Bypass
C67	.01	400	110420	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Sync. Coupling
C68	270			1468-0003	5W573		MO.5-33	LFM-335	Sync. Coupling ‡
C69	.1	200	110415	P288-1	GT2P1		ST-2-1	TM-1	Sync. Clip. Screen Byp.
C70	.01	600	25485	P684-01	GT6S1	GP2-335-01	ST-6-01	TM-11	Sync. Coupling
C71	.005	600	27760	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Integrator Net.
C72	.01	400	110420	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	" "
C73	.01	400	110420	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Vert. Osc. Grid Cap.
C74	.1	400	25483	P488-1	GT4P1		ST-4-1	TM-1	Vert. Discharge
C75	.1	400	25483	P488-1	GT4P1		ST-4-1	TM-1	Vert. Coupling
C76	47			1468-00005	5W545	GP1K-50	MO.5-45	LFM-45	Sync. Coupling
C77	.01	400	110508	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Fixed Trimmer
C78	.005	600	27760	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	AFC Filter
C79	.1	200	110415	P288-1	GT2P1		ST-2-1	TM-1	" "
C80	1000	600	110277	1467-01	1D3D1	GP2-335-01	MW.3-11	LFM-11	Phase Shifter
C81	.005	600	27760	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	AFC Coupling
C82	.05	200	110507	P288-05	GT2S5		ST-4-05	TM-15	Hor. AFC Screen Bypass
C83	.005	600	27760	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Hor. Osc. Grid Cap.
C84	.05	400	40632	P488-05	GT4S5		ST-4-05	TM-15	Hor. Osc. Screen Bypass
C85	330	500	110261						Differentiator Net.
C86	.01	400	110420	P488-1	GT4S1	GP2-335-01	ST-4-01	TM-11	Hor. Sync. Coupling
C87	680	500	110278	1479-0007	2R577		MW5.5-37	MS-37	Hor. Discharge
C88	1000	500	110214	1468-001	1W5D1	GP2L-001	MW.5-21	LFM-21	Hor. Coupling
C89	.1	200	110415	P288-1	GT2P1		ST-2-1	TM-1	Hor. Amp. Cath. Bypass
C90	1000		110425	1468-001	1W5D1	GP2L-001	MW.5-21	LFM-21	Bias Filter
C91	.05	400	40632	P488-05	GT4S5		ST-4-05	TM-15	Hor. Amp. Screen Byp.
C92	.005	1000	110509						Damper Filter
C93	.05	1000	110510	P1088-05	GT16S5		STM-10-05	TM-15	" "
C94	220	1500	110262						Fixed Trimmer
C95	500	10000	110504			410-500			HV Filter
C96	.01	600	25485	P648-01	GT6S1		ST-6-01	TM-11	Acc. Anode Bypass
C97	.1	200	110415	P288-1	GT2P1		ST-2-1	TM-1	Pic. Tube Cath. Dec.
C98	.1	400	25483	P488-1	GT4P1		ST-4-1	TM-1	Hor. Cent. Bypass
C99	.05	600	25491	P684-05	GT6S5		ST-6-05	TM-15	Line Filter
C100	.05	600	25491	P684-05	GT6S5		ST-6-05	TM-15	" "
C101	.1	200	110415	P288-1	GT2P1		ST-2-1	TM-1	Audio Coupling *

* Not used in all models.
‡ Some models use .05MFD in this application.
† Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STROM.CARL. PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1	1000Ω	25	145050		FW-25-1000	Focus Control Wire Wound
R2A	500KΩ	½	145072			Volume Control
B	Switch					Power Switch
C	Switch					Ext. Audio Switch
R3	100KΩ	½	145037	Q11-128	M-45-S	Brightness Control
R4	25KΩ	½	145039	Q11-120	M-40-S	Contrast Control
R5	25Ω	2	145052	W-25	43-25	Vert. Centering Control (Wire Wound)
R6	25Ω	4	145055		10-25	Horiz. Centering Control (Wire Wound)
R7	1500Ω	2	145051		43-1500	Vert. Linearity Control (Wire Wound)
R8	2 Meg.	½	145053	Q11-139	M-83-S	Vert. Size Control
R9	500KΩ	½	145040	Q11-133	M-58-S	Vert. Hold Control
R10	20KΩ	½	145054	Q11-119	M-36-S	Horiz. Drive Control
R11	500KΩ	½	145038	Q11-133	M-58-S	Picture Tube Bias Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STROMBERG-CARLSON PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R12	200Ω	½	149275		RF Cathode
R13	10KΩ	2	149276		RF Plate
R14	12KΩ	½	28171		RF Coil Shunt
R15	12KΩ	½	28171		Mixer Coil Shunt
R16	1 Meg.	½	28191		Mixer Grid
R17	47Ω	½	28142		Mixer Cathode
R18	330KΩ	½	28185		Mixer Screen
R19	12KΩ	½	28171		Osc. Grid
R20	10KΩ	2	149276		Osc. Plate
R21	820KΩ	½	149257		Mixer Transformer Shunt 5%
R22	10000Ω	½	28158		Mixer Plate Decoupling
R23	56000Ω	½	149258		1st Video IF Grid
R24	68Ω	½	28144		1st Video IF Cathode
R25	10KΩ	2	149259		1st Video IF Transformer Shunt
R26	22KΩ	½	149011	BT-2-22K	1st Video IF Plate
R27	22KΩ	2	149011	BT-2-22K	1st Video IF Plate

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STROM. CARL. PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R28	10KΩ	½	28170	BTS-10K	Bias Network
R29	1 Meg.	½	28191	BTS-1 Meg.	" " 20%
R30	6800Ω	½	149260		2nd Video IF Coil Shunt 5%
R31	68Ω	½	28144		2nd Video IF Cathode
R32	3900Ω	2	149050	BT-2-3900	2nd Video IF Decoupling
R33	3900Ω	½	149261		3rd Video IF Coil Shunt 5%
R34	100Ω	½	28146		3rd Video IF Cathode
R35	3900Ω	2	149050		3rd Video IF Decoupling
R36A	7000Ω	7		AB-7000	Bleeder Wire Wound
B	25000Ω	9.6	149267	AB-2500	Filter Wire Wound
C	622Ω	2		BW-2-68	Voltage Divider Wire Wound
R37	39KΩ	½	149262		Video Det. Coil Shunt 5%
R38	4700Ω	½	149264	BTS-4700-5%	Video Amp. Grid 5%
R39	3600Ω	2	149266	BT-2-3900	Video Amp. Plate
R40	47KΩ	2	149060	BT-2-47K	Video Amp. Screen
R41	47KΩ	2	149060	BT-2-47K	" "
R42	27KΩ	2	149058	BT-2-27K	Bleeder
R43	120Ω	2	149035	BW-2-120	Voltage Divider Wire Wound
R44	15Ω	½	28136	BW-½-15	" "
R45	22Ω	½	28138	BW-½-22	" "
R46	10KΩ	½	28170	BTS-10K	DC Rest. Diode Load
R47	470KΩ	½	28187	BTS-470K	Picture Tube Grid
R48	150KΩ	½	27640	BTS-150K	Voltage Divider
R49	100KΩ	½	28006	BTS-100K	1st Sound IF Grid
R50	68Ω	½	28144		1st Sound IF Cathode
R51	33KΩ	1	28158		1st Sound IF Screen
R52	1000Ω	2	28158		1st Sound IF Decoupling
R53	56KΩ	½	149258		2nd Sound IF Grid
R54	100KΩ	½	28006		1st Sound IF Grid Filter
R55	68Ω	½	28144		2nd Sound IF Cathode
R56	10KΩ	½	29170	BTS-10K	Voltage Divider
R57	47KΩ	2	149060		2nd Sound IF Screen
R58	1000Ω	½	28158		2nd Sound IF Decoupling
R59	100KΩ	½	28006	BTS-100K	Disc. Load
R60	100KΩ	½	28006	BTS-100K	" "
R61	68KΩ	½	28168	BTS-68K	De-emphasis
R62	22KΩ	½	27407	BTS-22K	Tone Compensation
R63	470KΩ	½	28187	BTS-470K	1st AF Grid
R64	100KΩ	½	28006	BTS-100K	1st AF Plate
R65	1 Meg.	½	28191	BTS-1 Meg.	1st AF Screen
R66	100KΩ	½	28006	BTS-100K	Voltage Divider
R67	470KΩ	½	28187	BTS-470K	Bias Network
R68	100KΩ	½	28006	BTS-100K	Output Grid
R69	2200Ω	2		BW-2-2200	Filter
R70	2200Ω	2		BW-2-2200	"
R71	8200Ω	2	149054	BT-2-8200	Voltage Dropping
R72	8200Ω	2	149054	BT-2-8200	" "
R73	3300Ω	½	28164	BTS-3300	Tuning Ind. Grid
R74	39KΩ	½	149261	BTS-39K	Sync. Clipper Grid
R75	3300Ω	½	28164	BTS-3300	Sync. Clipper Plate
R76	33KΩ	2	149012	BT-2-33K	Filter
R77	6800Ω	½	28168	BTS-6800	Voltage Divider
R78	1 Meg.	½	28191	BTS-1 Meg.	Tuning Ind. Network
R79	1 Meg.	½	28192	BTS-1.2 Meg.	Sync. Clipper Grid
R80	10KΩ	½	28170	BTS-10K	Sync. Clipper Plate
R81	100KΩ	1	149192	BTA-100K	Sync. Clipper Screen
R82	22KΩ	½	27407	BTS-22K	Voltage Divider
R83	1.2 Meg.	½	28192	BTS-1.2 Meg.	Vert. Buffer Grid
R84	6800Ω	½	28168	BTS-6800	Vert. Buffer Cathode See Note
R85	10KΩ	½	28170	BTS-10K	Integrator
R86	10KΩ	½	28170	BTS-10K	"
R87	10KΩ	½	28170	BTS-10K	Buffer Plate
R88	750KΩ	½		BTS-820K	Vert. Osc. Grid
R89	470KΩ	½	28187	BTS-470K	Vert. Osc. Plate
R90	4700Ω	½	149264	BTS-4700	Vert. Peaking
R91	820Ω	1	149175	BTA-820	Vert. Amp. Cathode
R92	2.2 Meg.	½	28195	BTS-2.2 Meg.	Vert. Amp. Grid
R93	470KΩ	½	28187	BTS-470K	Sync. Disc. Load
R94	470KΩ	½	28187	BTS-470K	Sync. Disc. Load
R95	470Ω	½	28154	BTS-470	Horiz. AFC Grid
R96	470KΩ	½	28187	BTS-470K	Horiz. AFC Filter Network
R97	10Ω	½	28134	BW-½-10	Horiz. AFC Cathode
R98	22KΩ	2	149011	BT-2-22K	Horiz. AFC Plate
R99	47KΩ	2	149060	BT-2-47K	Horiz. AFC Screen
R100	27KΩ	1	34578	BTA-27K	Voltage Divider
R101	47KΩ	½	28177	BTS-47K	Horiz. Osc. Grid
R102	5000Ω	10	149268	AB-5000	Horiz. Osc. Plate (Wire Wound)
R103	10KΩ	½	28170	BTS-10K	Horiz. Osc. Screen
R104	6800Ω	½	28168	BTS-6800	Differentiator
R105	220KΩ	½	28193	BTS-220K	Horiz. Discharge Grid
R106	680KΩ	½	28194	BTS-680K	Horiz. Discharge Plate
R107	10KΩ	½	28170	BTS-10K	Horiz. Peaking
R108	470KΩ	½	28187	BTS-470K	Horiz. Output Grid
R109	10Ω	½	28146		Parasitic Supp.
R110	100Ω	5	149274	AB-100	Horiz. Output Cathode (Wire Wound)
R111	27KΩ	2	149058	BT-2-27K	Horiz. Output Screen
R112	22KΩ	2	149011	BT-2-22K	" " "
R113	6KΩ	25	149272		Damper Filter (Wire Wound)
R114	5.6Ω	½	149271	BW-½-5.6	HV Filament (Wire Wound)
R115	680KΩ	1	149202		HV Filter
R116	10KΩ	2	149263	BT-2-10K	Filter
R117	10KΩ	2	149263	BT-2-10K	"
R118	330Ω	1	149171	BTA-330	Bias Network
R119A	2000Ω	11.5	149270	DA-2000	Series Focus Coil (Wire Wound)
B	250Ω	7.7		AB-250	Focus Coil Shunt (Wire Wound)
R120	12800Ω	24	149269		Filter (Wire Wound)
R121	100KΩ	1	149192	BTA-100K	" "
R122	100KΩ	1	149192	BTA-100K	" "
R123	2.2Ω	1	149273	BW-1-2.2	Time Delay Rect. Filament (Wire Wound)
R124	470KΩ	½	28187	BTS-470K	Voltage Divider
R125	220KΩ	½	28183	BTS-220K	" "
R126	1250Ω	5		AB-1250	Focus Coil Shunt See Note
R127	22KΩ	½	27407	BTS-22K	Voltage Divider See Note
R128	10KΩ	2	149263	BT-2-10K	Filter

Note. Not used in all models.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	STROMBERG-CARLSON PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	117VAC @ 2.6A	760VCT @ .32A 55VAC Tap. SEC. 4 6.3VAC @ 9A	5VAC @ 6A	5VAC @ 2A	161414	P-8152 #		

Drill new mounting holes. Add dropping resistor to obtain 55V from one side of HV winding.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	SEC.	REPLACEMENT DATA STROM. CARL. PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	NOTES
T2	68Ω Tap. @ 38Ω	68Ω Tap. @ 21Ω					Hor. Osc. Trans.
T3	280Ω	740Ω SEC. 2 600Ω					Vert. Block Osc.Trans
T4	430Ω Tap @ 180Ω	SEC. 1 10.5Ω Tap. @ .5Ω SEC. 2 0Ω		A-8117	TFB-1		Hor. Output Trans.
T5	575Ω	7Ω		A-8115	TSO-1	A-3035	Vert. Output Trans.
T6A	15Ω			DY-1			Hor. Deflection Coil
B	62Ω						Vert. Deflection Coil
T7	525Ω						Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	SEC.	DC RES. PRI.	SEC.	REPLACEMENT DATA STROMBERG-CARLSON PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
T8	5000Ω	3.2Ω	315Ω	.4Ω		A-3849	RO-303	A-2902	

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA STROMBERG-CARLSON PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
L1	.310A	88Ω	4 Henries	C-160014	C-2326 #			# Drill new mounting holes.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	SEC.	REPLACEMENT DATA STROMBERG-CARLSON PART No.	MEISSNER PART No.	NOTES
L2	Ant. Input	0Ω		114049		
L3	RF End.Ind.	0Ω				
L4	RF Plate	0Ω				Part of 164007
L5	Mixer End Inductor	0Ω				Part of 164007
L6	Mixer Grid	0Ω				
L7	Osc. End. Inductor	0Ω				Part of 164007
L8	Osc. Coil	0Ω				
L9	Osc. Shunt	0Ω				
L10	1st Video IF	.7Ω		114341		
L11	RF Choke	0Ω		114352		
L12	1st Video IF Coup.	.7Ω		114342		
L13	2nd Video IF	.7Ω		114346		
L14	2nd Video IF	.7Ω		114343		
L15	3rd Video IF	.7Ω		114347		
L16	21.9MC Sound Trap	0Ω		114351		
L17	Adjacent Channel Sound Trap	.1Ω		114350		
L18	3rd Video IF	.7Ω		114344		
L19	4th Video IF	.7Ω		114348		
L20	4th Video IF	.7Ω		114349		
L21	Peaking	15.5Ω		114355		
L22	Peaking	18.5Ω		114356		
L23	4.5MC Trap	1.5Ω		114345		
L24	Peaking	10Ω		114357		
L25	1st Sound IF	0Ω	0Ω	161234		
L26	2nd Sound IF	0Ω	0Ω	161234		
L27	Disc. Trans	.5Ω	0Ω	161233		
L28	Hor. Linearity	37Ω		114625		
L29	Hor. Size	.2Ω		114626		
L30	Coupling Choke					

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

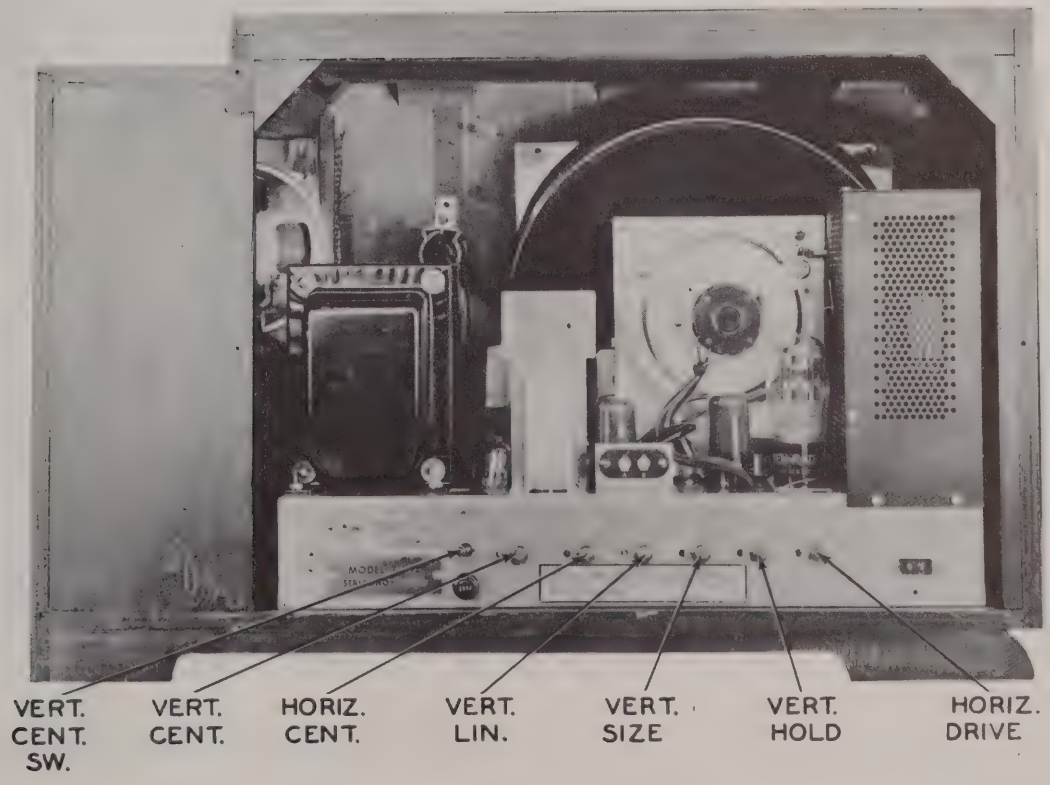
ITEM No.	RATING		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	STROM. CARL. PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.2Ω	155071	ST-803†† MOD.P525-V	52A21	†† Use adaptor Baffle
	CONE DIA.	V. C. DIA.				
SP2	5 1/4"	3/4"				

DIAL LIGHTS

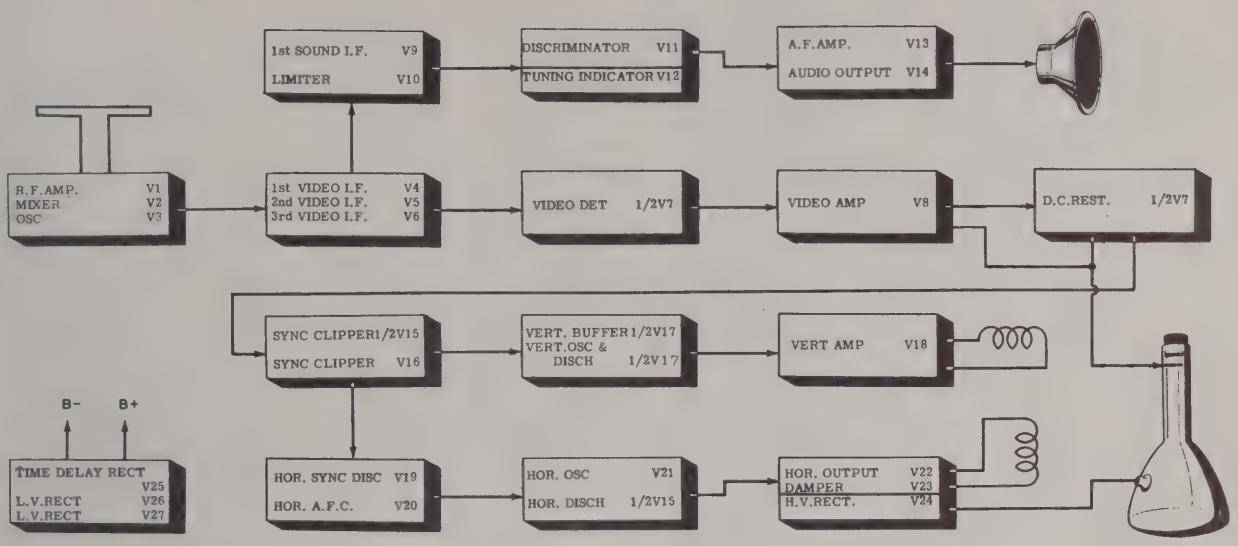
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					STROMBERG-CARLSON PART No.		
M1	Bayonet	6-8V	0.25A	Blue	29956		Type #44

MISCELLANEOUS

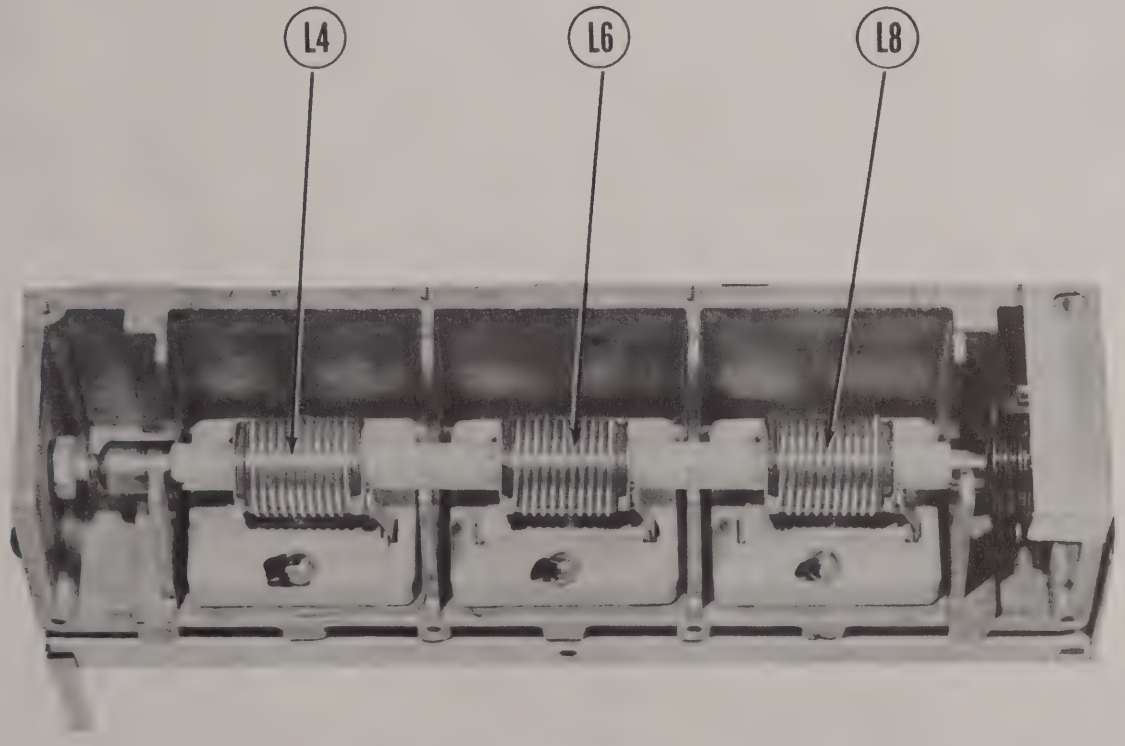
ITEM No.	PART NAME	STROMBERG-CARLSON PART No.	NOTES
M2	Tuner	164006	
M3	Fuse	41034	
M4	Relay	202969	
M5	Band Switch	158028	
M6	Vert. Positioning SW.	158029	
M7	Ion Trap	169004	
M8	Fuse		Type AGC .25A
	Three Gang Variable Inductor	164007	Part of Tuner
	Knob	134038	Plain
	Knob	134048	On-Off SW.
	Knob	134053	Tuning
	Knob	134055	Off Set
	Knob	134057	Selector Switch
	Safety Glass	138016	



CABINET-REAR VIEW



BLOCK DIAGRAM



INDUCTUNER-TOP VIEW

HORIZONTAL FREQUENCY ADJUSTMENT

If the picture does not remain in "sync" horizontally turn the horizontal hold adjustment (B1) and determine the two extreme positions where the picture drops into "sync"-not out of synchronization. Set B1 midway between these two positions.

Turn the horizontal centering control until the raster is positioned correctly horizontally. Decrease the contrast control and increase the brightness so the entire raster is visible including the area to the right which usually is blanked out. Adjacent to the right edge of the picture there should be a vertical gray strip about 1/4" wise at the right edge of the raster. Further to the right a darker strip may or may not be present. If this strip is over 3/16" wide or if the first lighter gray strip is not present the phasing is incorrect. If so, turn the phasing control (B2) until the left edge of the darker strip is at the extreme right edge of the raster almost to the disappearing point.

HORIZONTAL LINEARITY AND SIZE ADJUSTMENTS

Adjust the horizontal size control (B3) so the picture width is the same as the picture frame opening.

Adjust the horizontal drive control for the best linearity of pattern on the right side of the picture. (This control is pre-set at the factory and normally should not require adjustment in the field.)

The horizontal linearity control (B4) affects the middle portions of the picture. Readjust the horizontal size control (B3) after the horizontal drive and linearity controls have been adjusted, if necessary.

BIAS CONTROL ADJUSTMENT

If the picture tube has been replaced, turn the contrast control fully counterclockwise.

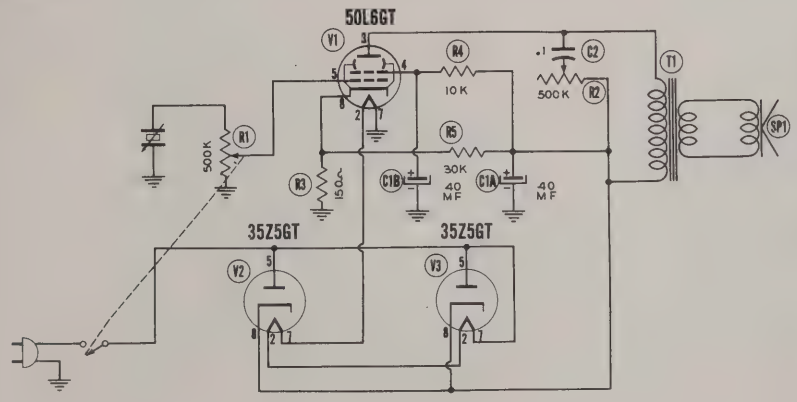
Turn the brightness control to the point where a VTVM reading of 50 volts is obtained between the brightness control "arm" and chassis.

Advance the bias control to the point where the raster just disappears.

SUPREME
MODEL 711

SUPREME MODEL 711

TRADE NAME	Supreme, Model 711
MANUFACTURER	Aim Industries Inc., 41 Union Square, New York 3, New York
TYPE SET	AC Operated Phono Player with 3 Tube Amplifier
TUBES (THREE)	Types 50L6GT Power Output, (2) 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC
RATING	.25 Amp. @ 117 Volts AC



Pin No.	50L6GT Volt.	50L6GT Res.	35Z5GT Volt.	35Z5GT Res.
1	0V	Inf.	0V	Inf.
2	45VAC	50Ω	80VAC	85Ω
3	125VDC	†32KΩ	70VDC	75Ω
4	125VDC	†10KΩ	0V	Inf.
5	110VDC	2KΩ	117VAC	120Ω
6	0V	Inf.	0V	Inf.
7	0V	0Ω	45VAC	50Ω
8	8VDC	150Ω	150VDC	27KΩ

Pin No.	35Z5GT Volt.	35Z5GT Res.
1	0V	Inf.
2	80VAC	85Ω
3	70VDC	90Ω
4	0V	Inf.
5	117VAC	120Ω
6	0V	Inf.
7	117VAC	120Ω
8	150VDC	27KΩ

†Measured From Pin 8 Of V3.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4916-17

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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DATE 8/49 4916-17 SET #68 FOLDER 17

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SUPREME PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Power Output	50L6GT	50L6GT	7AC	
V2	Rectifier	35Z5GT	35Z5GT	6AD	
V3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SUPREME PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150		PRSA150/40-40	EDL4415		DSB-2x40-150	TA-440	Filter Green
B	40	150							Filter Red
C2	.1	150		P288-1	GT2P1		ST-2-1	TM-1	Tone Compensation

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SUPREME PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½		Q13-133	M-60-Z	Volume control and switch
B	Switch			76-1	SW-A	Attach to R1A Per Instructions
R2	500KΩ	½		Q11-133	M-58-S	Tone Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SUPREME PART No.	IRC PART No.	IDENTIFICATION CODES
R3	150Ω	1		BW-1-150	Output Cathode
R4	10KΩ	½		BTS-10K	Filter
R5	30KΩ	1		BTA-33K	Voltage Divider

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SUPREME PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
T1	4400Ω	3Ω	330Ω	.7Ω		A-3856	RO-9	A-2900	

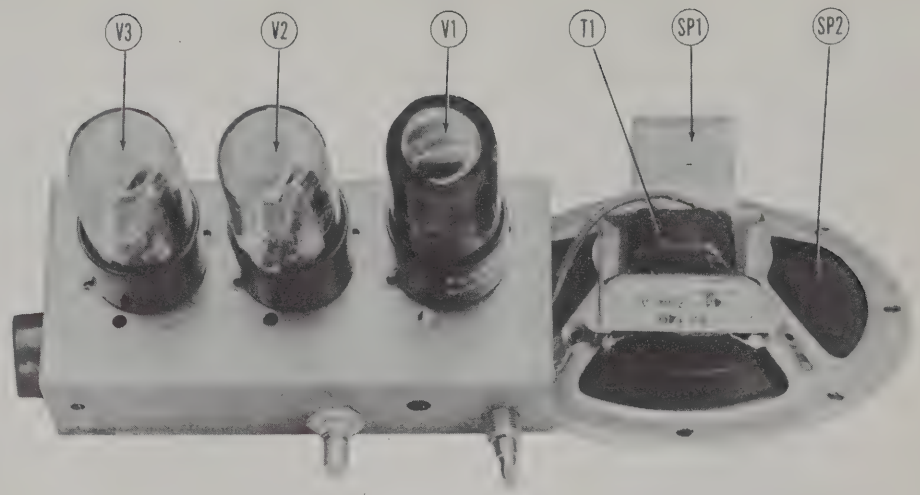
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: SUPREME PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-105		
SP1	PM	3Ω		MOD.P5-X	5A07	
	CONE DIA.	V. C. DIA.				
SP2	4 5/8"	9/16"				

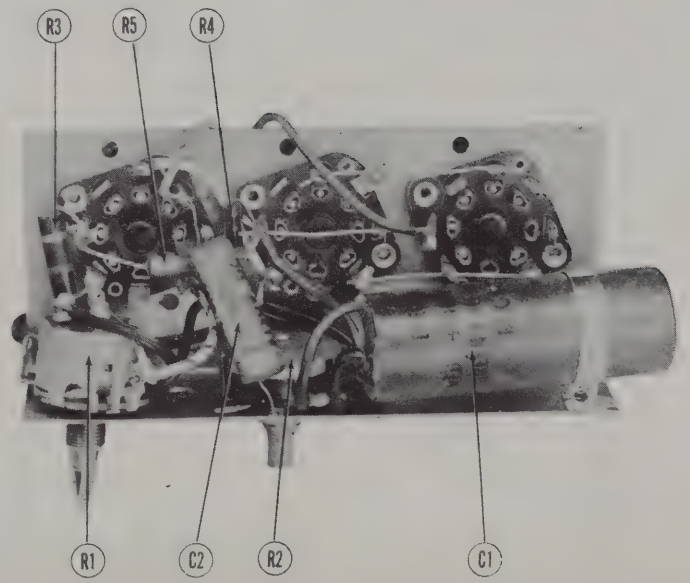
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: SUPREME PART No.	ASTATIC PART No.	REMARKS
M1		L-82A	

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



PHOTOFACT* Folder

TRUETONE
MODEL D2983

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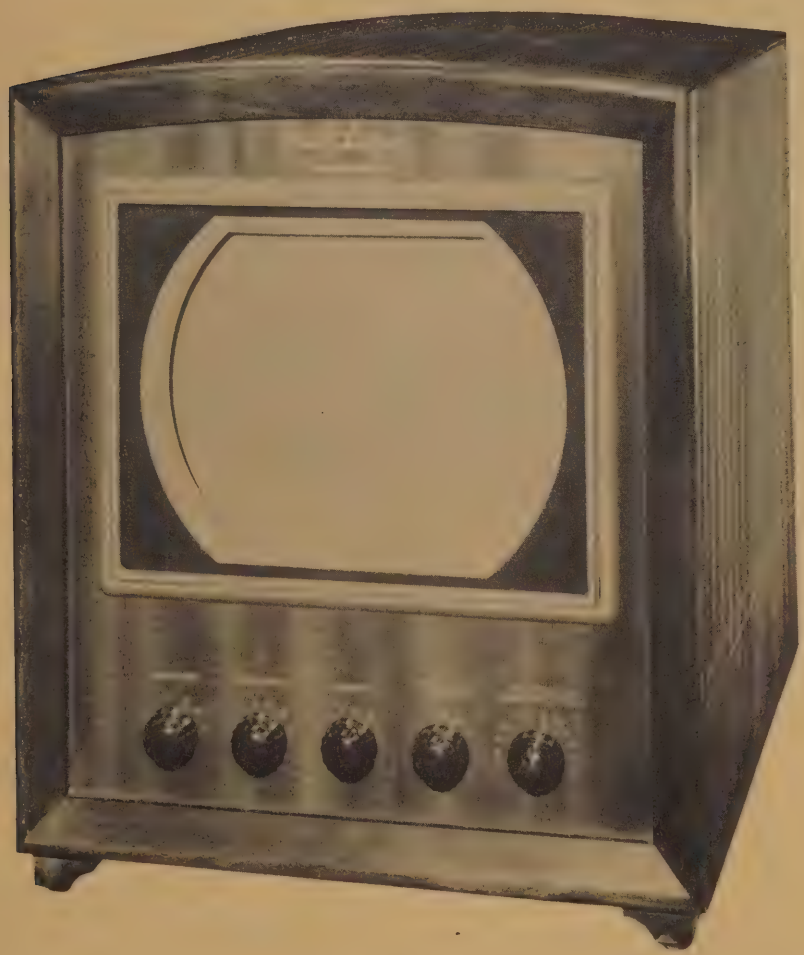

TRUETONE
MODEL D2983

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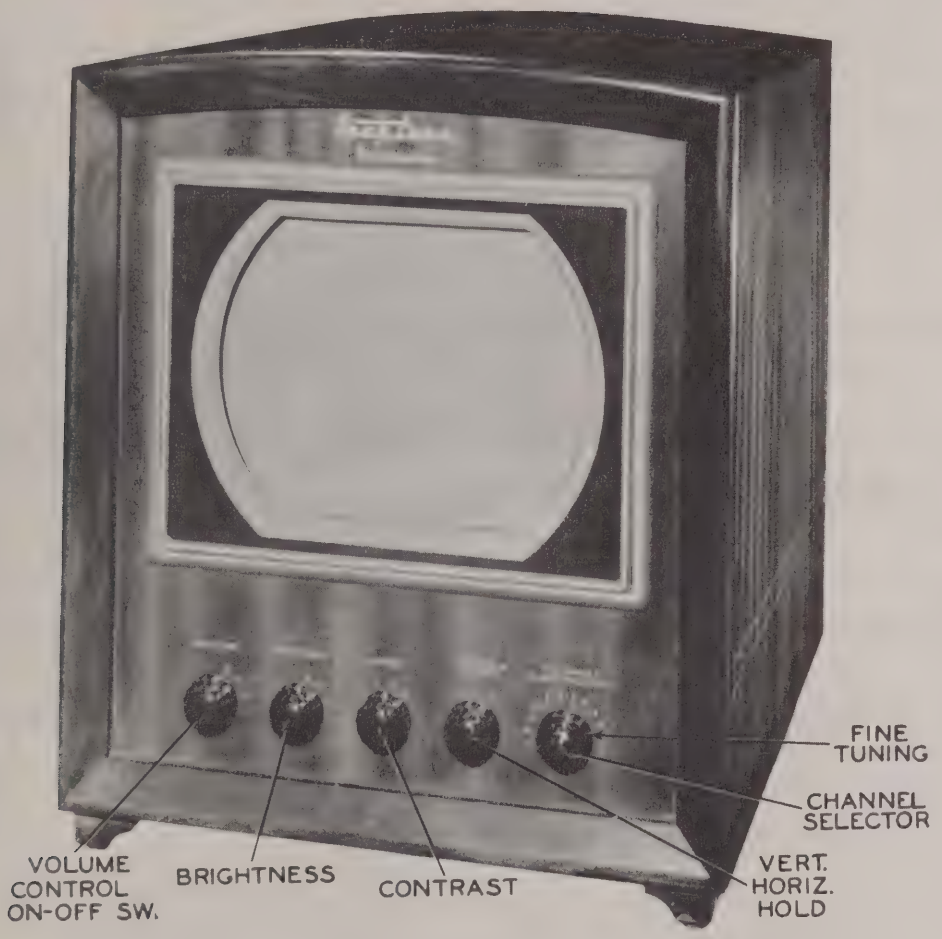

TRUETONE
MODEL D2983

TRADE NAME	Truetone Model D-2983
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Television Receiver
TUBES	Twenty-Three
POWER SUPPLY	105-125 Volts, 60 Cycles AC RATING: 1.8 Amps @ 117 Volts
TUNING RANGE—	Channels 2 through 13

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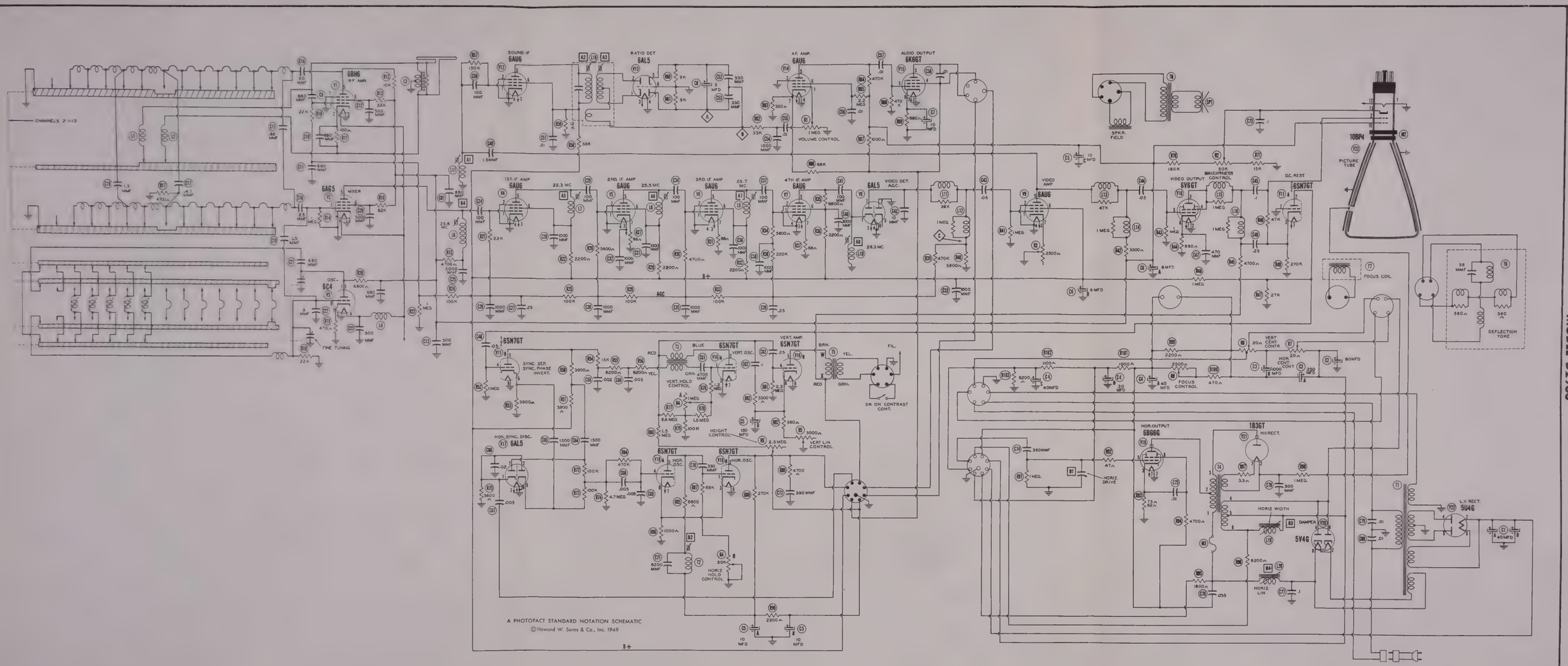
TRUETONE
MODEL D2983
CHANNELS 2 -13
6BH6
RF AMP.
6AG5
MIXER
6C4
OSC.
FINE TUNING
SOUND IF
6AU6
RATIO DET
6AL5
A.F. AMP.
6AU6
AUDIO OUTPUT
6K6GT
VOLUME CONTROL
1ST. IF AMP
6AU6
2ND. IF AMP
6AU6
3RD. IF AMP
6AU6
4TH IF AMP
6AU6
6AL5
VIDEO DET. AGC.
AGC
VIDEO AMP
6AU6
SPKR. FIELD
VIDEO OUTPUT
6V6GT
30K
VERTICAL HEIGHT CONTROL
D.C. REST
6SN7GT
10BP4
PICTURE TUBE
FOCUS COIL
DEFLECTION YOKE
VERT. CENT. CONTR.
HOR. CENT. CONT.
FOCUS CONTROL
1 MEG
VOLUME CONTROL
6SN7GT
VERT. OSC.
VERT. HOLD CONTROL
HEIGHT CONTROL
VERT. LIN CONTROL
VERT. AMP.
6SN7GT
BRN.
YEL.
RED
GRN.
FIL.
SW. ON CONTRAST CONT.
HOR. SYNC. DISC.
6AL5
SYNC. SEP. SYNC. PHASE INVERT.
6SN7GT
HOR. OSC.
HORIZ HOLD CONTROL
HORIZ DRIVE
HOR. OUTPUT
6BG6G
1B3GT
H.V. RECT.
HORIZ WIDTH
DAMPER
5V4G
HORIZ LIN
L.V. RECT.
5U4G
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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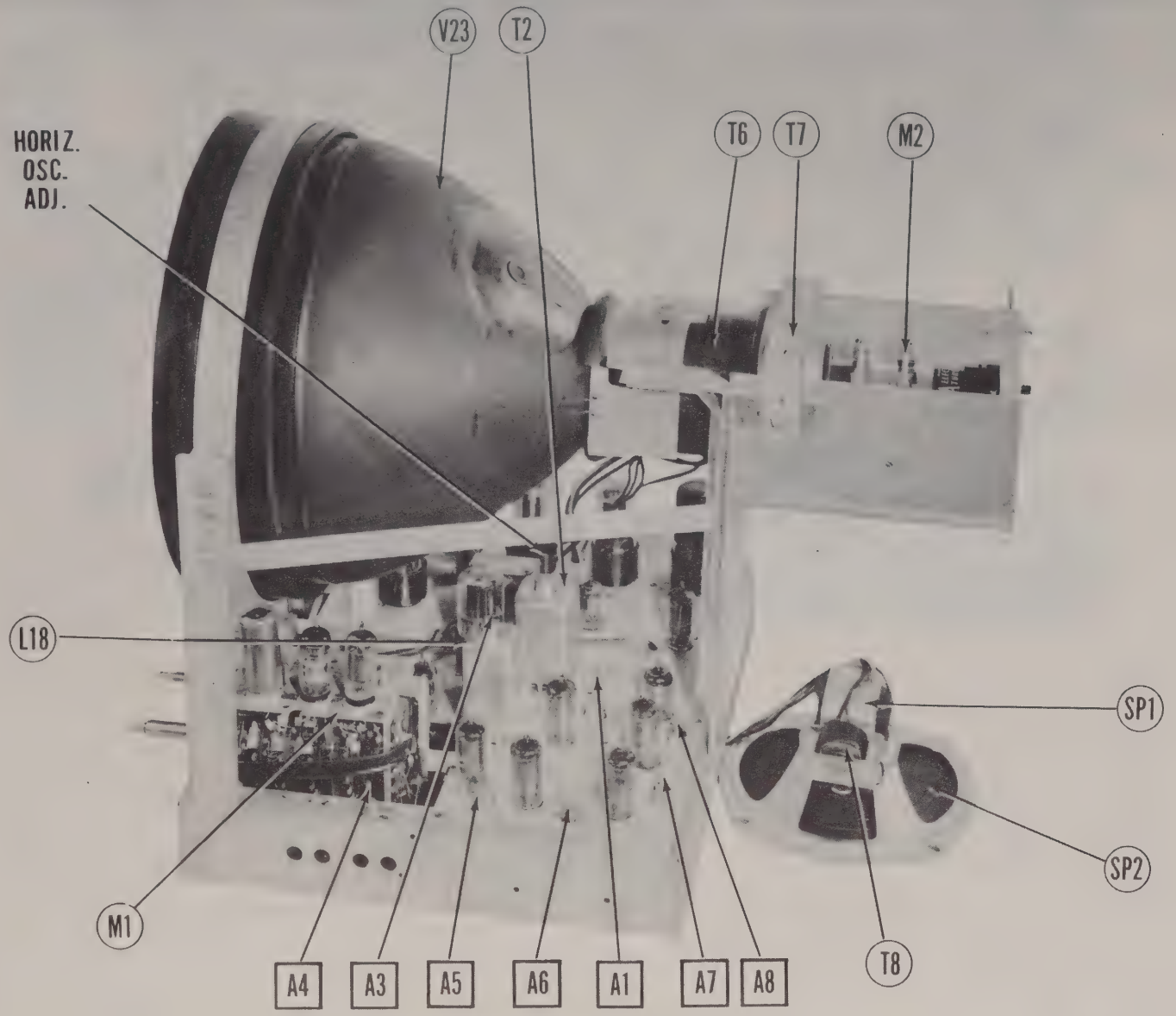
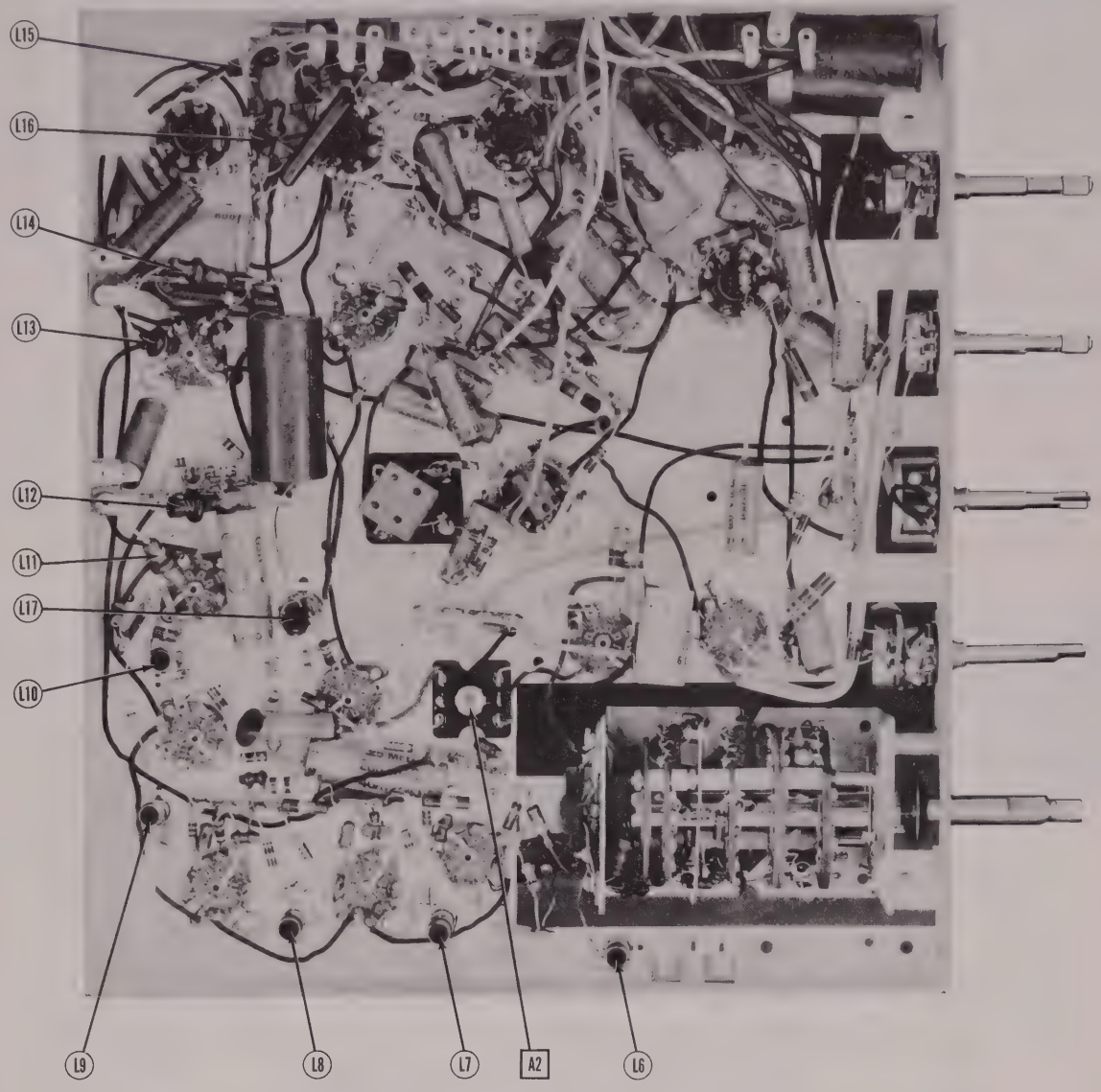
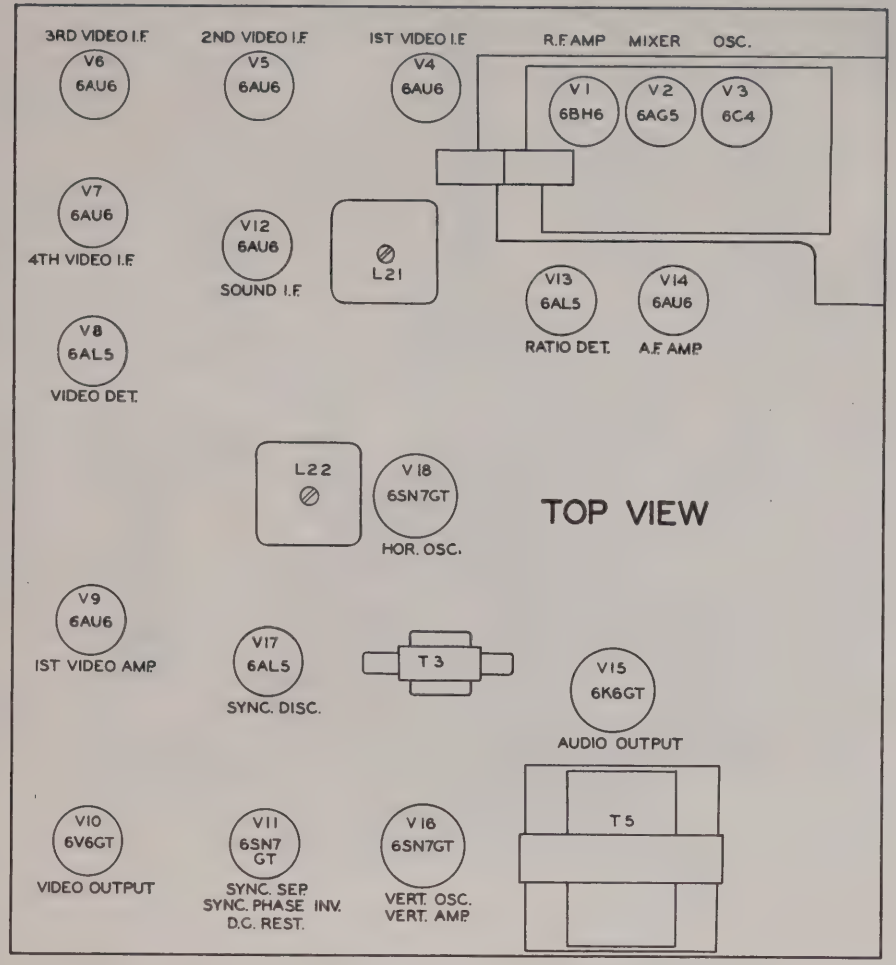
B+

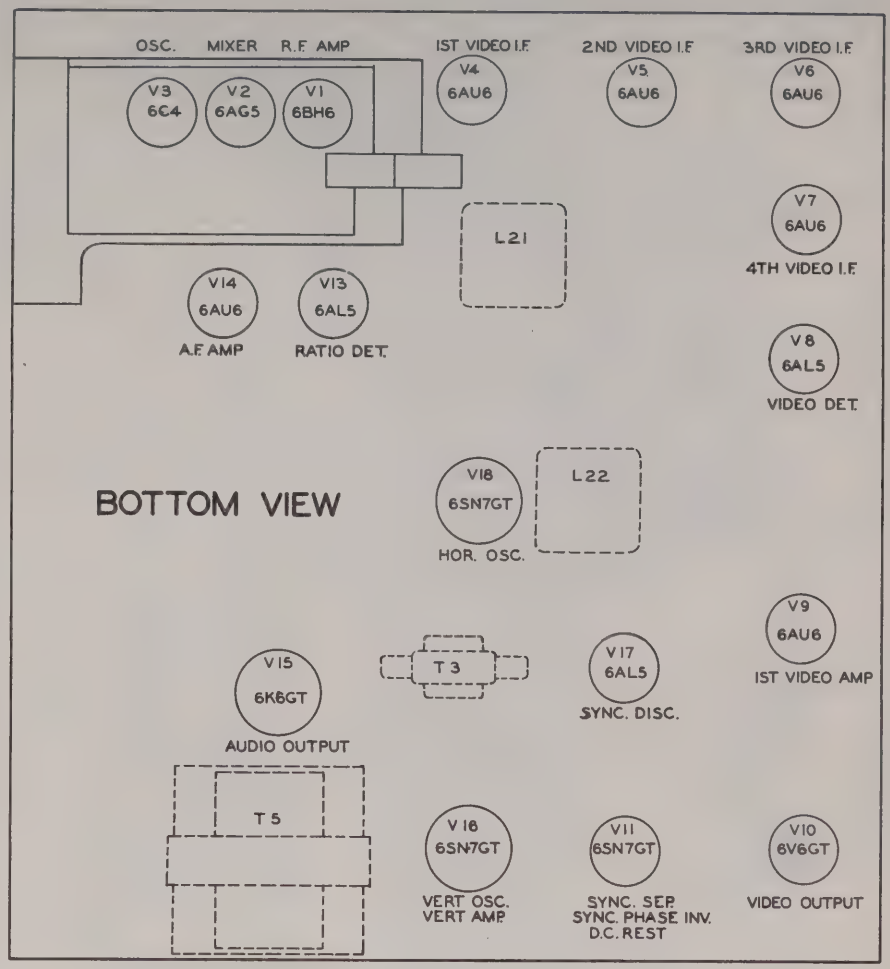


CHASSIS-TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

SOUND ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	5000MMF	High side to pin 1 (Grid) 6AU6 (V9). Low side to chassis.	4.5 MC (Unmod)	Any	DC Probe to pin 7 6AL5 (V13) Point (A) Common lead to chassis.	A1, A2	Adjust for maximum deflection. Attenuate signal generator to give approximately 1 volt reading on VTVM.
2.	5000MMF	"	"	"	DC Probe to point (B) Common to chassis.	A3	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

Shift the frequency of the signal generator either side of 4.5MC and slightly readjust A2 for approximately equal peaks. For best results, use only enough signal generator output to give one volt peaks. Retouch A3 for null point.

IF AMPLIFIER ALIGNMENT

Remove oscillator tube V3 (6C4) before aligning the IF coils to prevent any possible spurious beats which might give improper alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3.	Two 150Ω carbon res.	Insert resistor in each generator lead and connect across antenna terminals.	25.8MC 22.3MC 25.5MC 23.7MC 26.3MC	2 " " " "	DC Probe to point (C) Common to chassis.	A4 A5 A6 A7 A8	Adjust the five IF Coils at their listed frequencies for maximum deflection keeping signal generator level at such a point to maintain approximately a two volt reading on VTVM.

Tune the signal generator from 21MC thru 26.25MC, attenuated to give a 1 1/2 volt reading on VTVM at the peaks. Plot IF response curve. Check readings at 21.75MC, 26.25MC and the dip between peaks. See figure 1 for correct response curve.

OVERALL IF RESPONSE CHECK USING SWEEP GENERATOR AND OSCILLOSCOPE

Connect synchronized sweep voltage from signal generator to horizontal amplifier in scope to obtain horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	5000MMF	High side to pin 1 (Grid) 6AG5 (V2). Low side to chassis.	24MC (10MC Sweep)	21.75MC 26.25MC	2	Vert. Amp. to point (C) Low side to chassis.		If necessary, slightly retouch A4, A5, A6, A7, and A8 to obtain pattern similar to Fig 1. Check to see that markers fall at proper points.

OSCILLATOR ALIGNMENT

The RF and Mixer lines of the tuner are very stable and pre-set at the factory, and normally do not require adjustment in the field. They may be touched up, however, by compressing or expanding the coils as required to bring up the overall gain.

The local oscillator operates 24.5MC above the center frequency of each TV Channel. To set the local oscillator, a seperate "BFO" generator set at 24.5MC is used to obtain a zero beat with this difference frequency. Couple the "BFO" generator to the receiver by means of a few turns of hookup wire coiled around the 6AL5 video detector tube (V8). Connect a .01mfd. capacitor between point (D) on the schematic and pin 1 of the 6AU6 audio amplifier tube (V14). Turn the fine tuning control to the midpoint of its range and set the channel selector switch to the channel which is to be aligned. (The oscillator circuits of each channel are independent of each other and therefore only those channels requiring alignment need be adjusted.)

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BFO GENERATOR FREQUENCY	CHANNEL		ADJUST	REMARKS
5.	Two 150Ω res.	Insert resistor in each lead of signal generator and connect across the antenna input.	57MC 63MC 69MC 79MC 85MC 177MC 183MC 189MC 195MC 201MC 207MC 213MC	24.5MC " " " " " " " " " " " "	2 3 4 5 6 7 8 9 10 11 12 13		A9 A10 A11 A12 A13 A14 A15 A16 A17 A18 A19 A20	Adjust slugs or shift the coil turns for rough audio beat in the speaker.

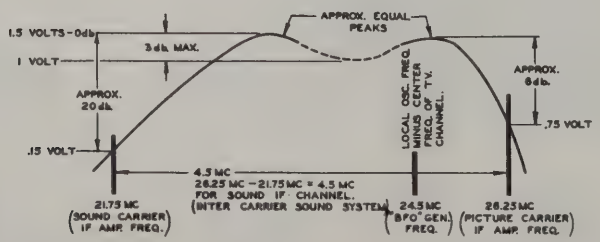
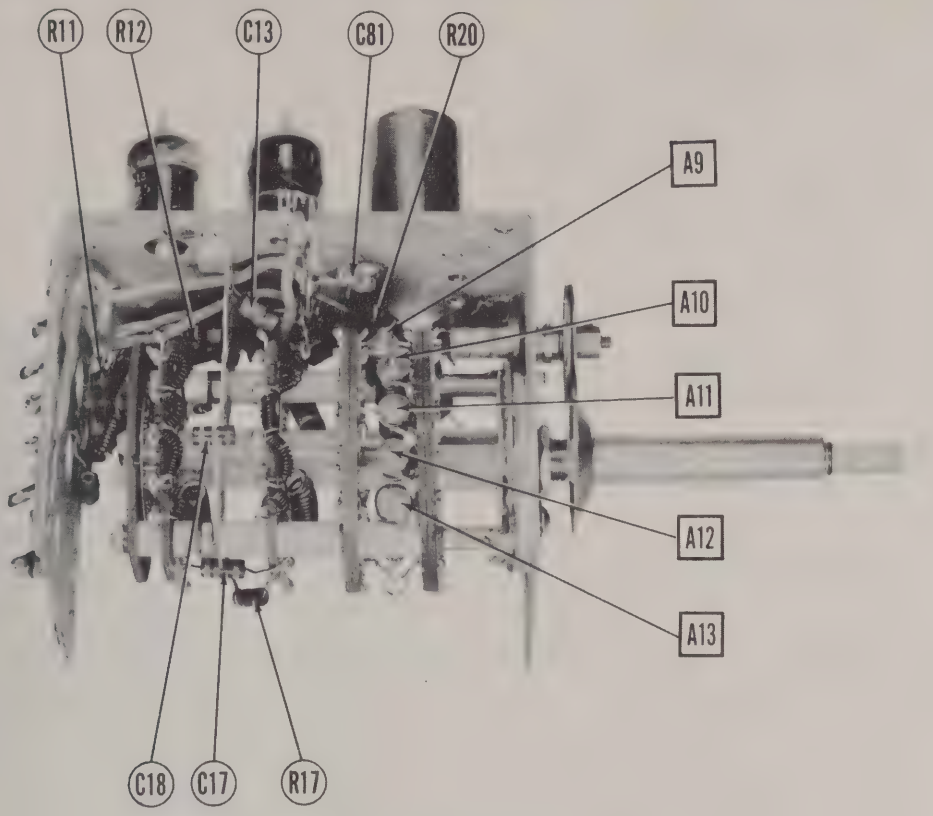
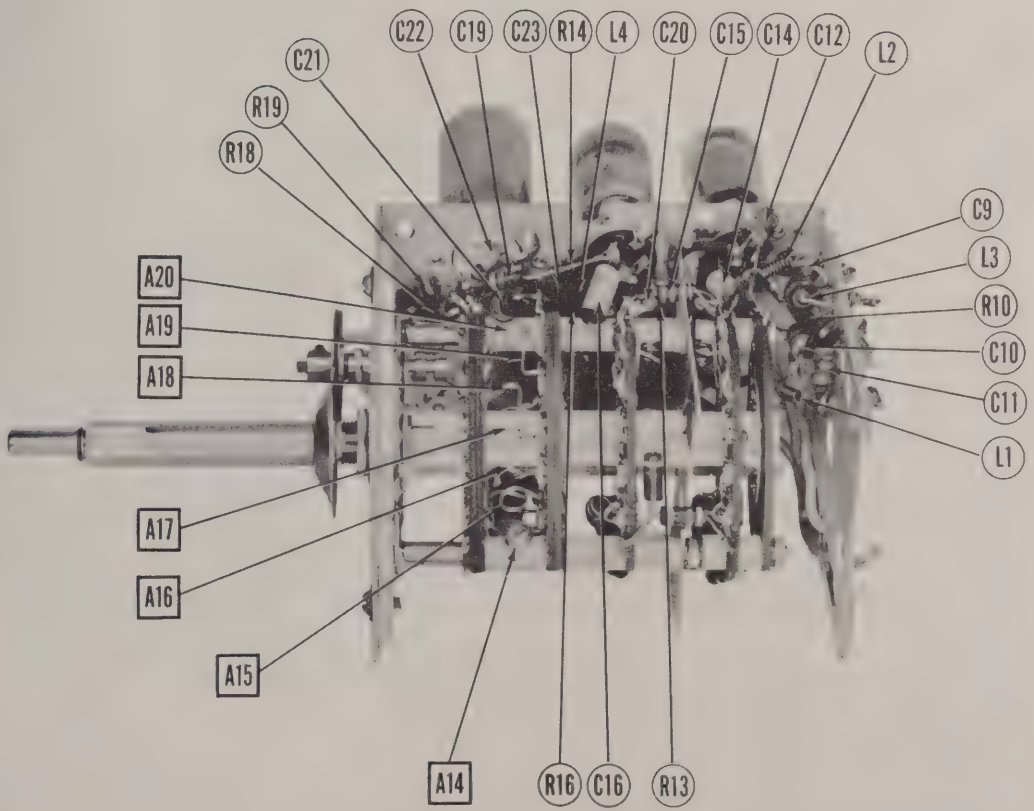

1.5 VOLTS - 0db
1 VOLT
.15 VOLT
3db MAX.
APPROX. EQUAL PEAKS
APPROX. 20db.
APPROX. 6db.
.75 VOLT
LOCAL OSC. FREQ. LINED CENTER FREQ. OF TV. CHANNEL.
4.5 MC
26.25 MC - 21.75 MC = 4.5 MC FOR SOUND IF CHANNEL. (INTER CARRIER SOUND SYSTEM)
21.75 MC (SOUND CARRIER IF AMP. FREQ.)
24.5 MC BFO GEN. FREQ.
26.25 MC (PICTURE CARRIER IF AMP. FREQ.)

FIG. 1



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BH6	-.3VDC	.7VDC	0V	6.3VAC	150VDC	130VDC	0V		
V 2	6AG5	-.3VDC	0V	0V	6.3VAC	180VDC	115VDC	0V		
V 3	6C4	150VDC	0V	0V	6.3VAC	150VDC	§-.6VDC	4.1VDC		
V 4	6AU6	-.6VDC	0V	6.3VAC	0V	120VDC	120VDC	0V		
V 5	6AU6	-.4VDC	0V	6.3VAC	0V	120VDC	120VDC	.6VDC		
V 6	6AU6	-.4VDC	0V	6.3VAC	0V	120VDC	120VDC	.6VDC		
V 7	6AU6	-.3VDC	0V	6.3VAC	0V	110VDC	120VDC	.6VDC		
V 8	6AL5	0V	0V	6.3VAC	0V	0V	0V	-.7VDC		
V 9	6AU6	0V	0V	6.3VAC	0V	195VDC	145VDC *	4VDC		
V 10	6V6GT	0V	0V	230VDC	230VDC	0V	0V	6.3VAC	14VDC	
V 11	6SN7GT	0V	16.5VDC	1.2VDC	0V	130VDC	5.5VDC	6.3VAC	0V	
V 12	6AU6	-.4VDC	0V	6.3VAC	0V	28VDC	28VDC	0V		
V 13	6AL5	-.1VDC	.1VDC	6.3VAC	0V	.6VDC	0V	-.6VDC		
V 14	6AU6	0V	0V	6.3VAC	0V	100VDC	35VDC	1.2VDC		
V 15	6K6GT	0V	0V	210VDC	217VDC	0V	0V	6.3VAC	15VDC	
V 16	6SN7GT	-8.3VDC	60VDC 125VDC	0V	0V	320VDC	5VDC 17VDC	6.3VAC	0V	
V 17	6AL5	0V	0V	6.3VAC	0V	1.2VDC	0V	-.6VDC		
V 18	6SN7GT	-7.4VDC	165VDC	13VDC	.1VDC	360VDC	13VDC	6.3VAC	0V	
V 19	6BG6G	0V	0V	6VDC	0V	-1.1VDC	0V	6.3VAC	260VDC	TOP CAP *
V 20	5V4G	0V	450VDC	0V	370VDC	0V	370VDC	0V	450VDC	
V 21	1B3GT	* DO NOT MEASURE								
V 22	5U4G	0V	380VDC	0V	370VAC	0V	370VAC	0V	380VDC	
V 23	10BP4	0V	.9VDC	PIN 10 200VDC	PIN 11 50VDC	PIN 12 6.3VAC				

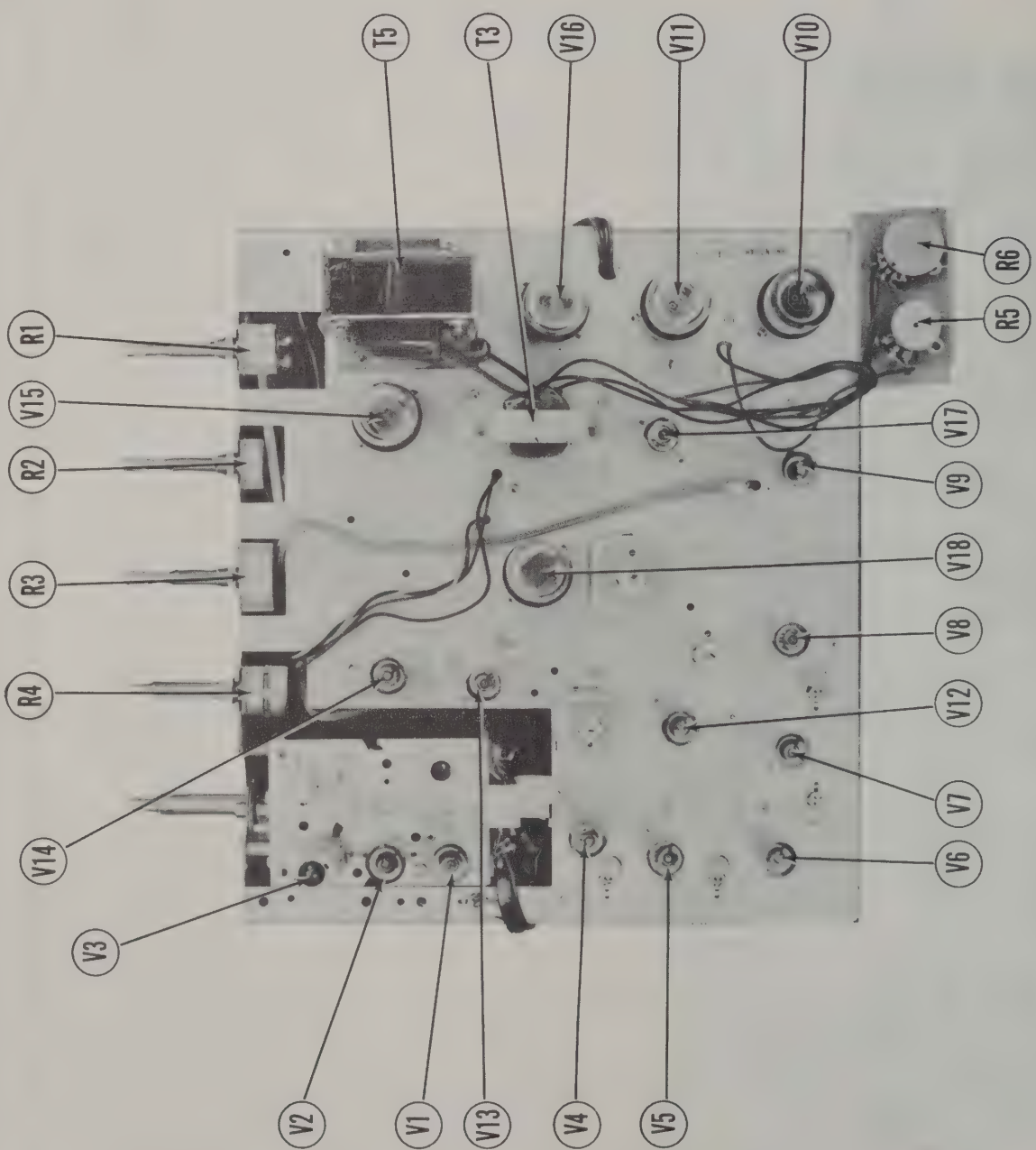
* Do not measure
§ Taken with vacuum tube voltmeter.

RESISTANCE READINGS

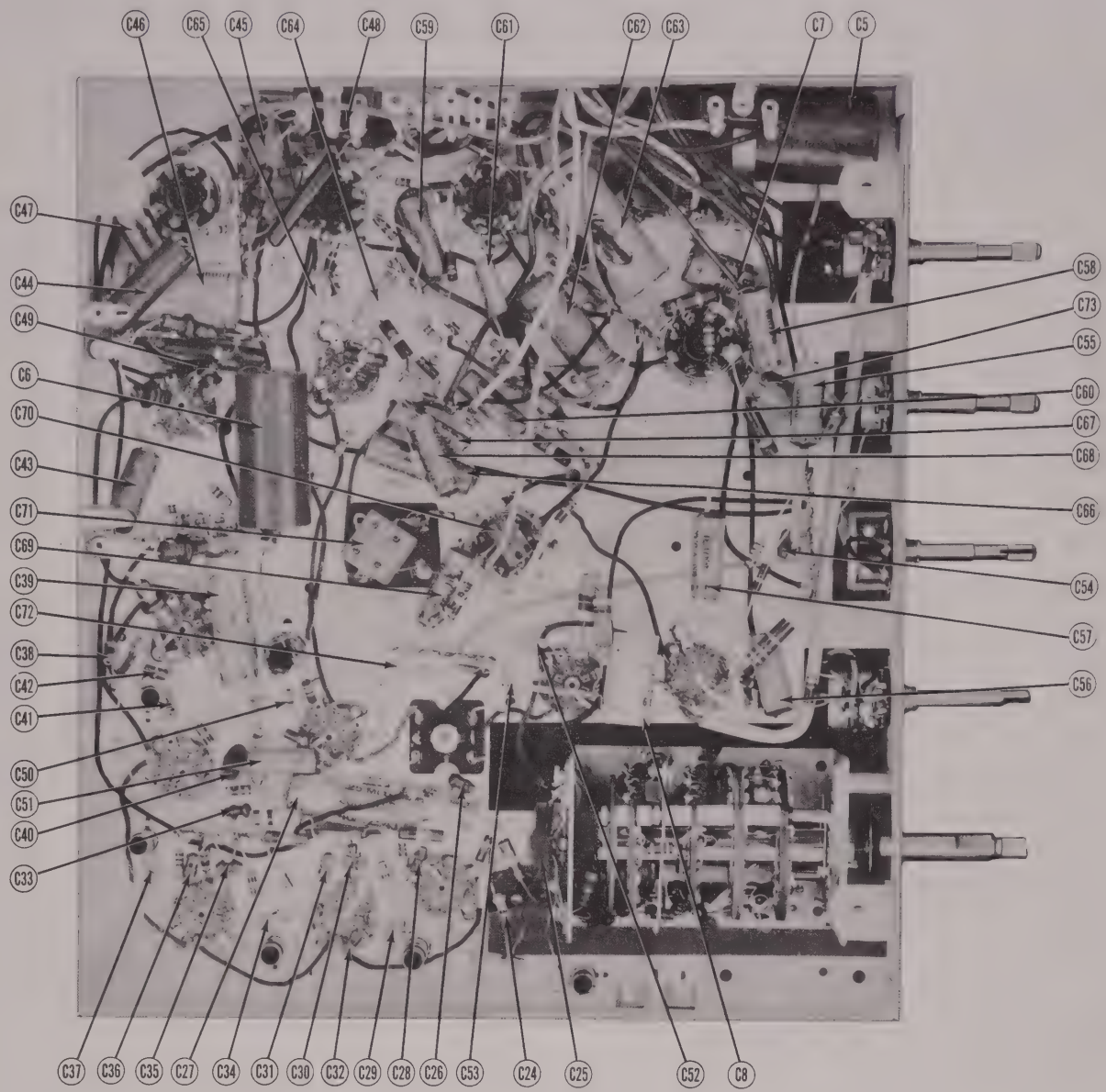
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BH6	500KΩ	100Ω	0Ω	.1Ω	†13KΩ	†39KΩ	0Ω		
V 2	6AG5	1 Meg.	0Ω	0Ω	.1Ω	†6.5KΩ	†85KΩ	0Ω		
V 3	6C4	†8KΩ	Inf.	0Ω	.1Ω	†8KΩ	22KΩ	470Ω		
V 4	6AU6	470KΩ	0Ω	.1Ω	0Ω	†4KΩ	†4KΩ	0Ω		
V 5	6AU6	440KΩ	0Ω	.1Ω	0Ω	†4KΩ	†4KΩ	68Ω		
V 6	6AU6	400KΩ	0Ω	.1Ω	0Ω	†4KΩ	†4KΩ	68Ω		
V 7	6AU6	550KΩ	0Ω	.1Ω	0Ω	†11KΩ	†4KΩ	68Ω		
V 8	6AL5	0Ω	0Ω	.1Ω	0Ω	Inf.	0Ω	6KΩ		
V 9	6AU6	1 Meg.	0Ω	.1Ω	0Ω	†5KΩ	†2KΩ	2.3KΩ		
V 10	6V6GT	Inf.	0Ω	†4.8KΩ	†4.8KΩ	1 Meg.	Inf.	.1Ω	680Ω	
V 11	6SN7GT	0Ω	†32KΩ	270KΩ	1 Meg.	†10KΩ	3.9KΩ	.1Ω	0Ω	
V 12	6AU6	150KΩ	0Ω	.1Ω	0Ω	†13KΩ	†13KΩ	0Ω		
V 13	6AL5	Inf.	Inf.	.1Ω	0Ω	9KΩ	0Ω	9KΩ		
V 14	6AU6	12.5Ω	0Ω	.1Ω	0Ω	†470KΩ	†2.2Meg.	330Ω		
V 15	6K6GT	Inf.	0Ω	†1.5KΩ	†1.2KΩ	470KΩ	Inf.	.1Ω	680Ω	
V 16	6SN7GT	1.5 Meg.	†2.7Meg. †1.5Meg.	0Ω	2.2 Meg.	†900Ω	4.5KΩ 500Ω	.1Ω	0Ω	
V 17	6AL5	5.6KΩ	5.6KΩ	.1Ω	0Ω	5 Meg.	0Ω	5 Meg.		
V 18	6SN7GT	100KΩ	♦270KΩ	1000Ω	5 Meg.	♦9KΩ	1000Ω	.1Ω	0Ω	
V 19	6BG6G	Inf.	0Ω	75Ω	Inf.	1 Meg.	Inf.	.1Ω	†5KΩ	TOP CAP ♦220Ω
V 20	5V4G	Inf.	370KΩ	Inf.	†650Ω	Inf.	†650Ω	Inf.	370KΩ	
V 21	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ♦400Ω
V 22	5U4G	Inf.	8KΩ	Inf.	32Ω	Inf.	30Ω	Inf.	8KΩ	
V 23	10BP4	0Ω	320KΩ	PIN 10 †2KΩ	PIN 11 50KΩ	PIN 12 .1Ω				

† Measured from pin 2 of V22
♦ Measured from pin 8 of V20

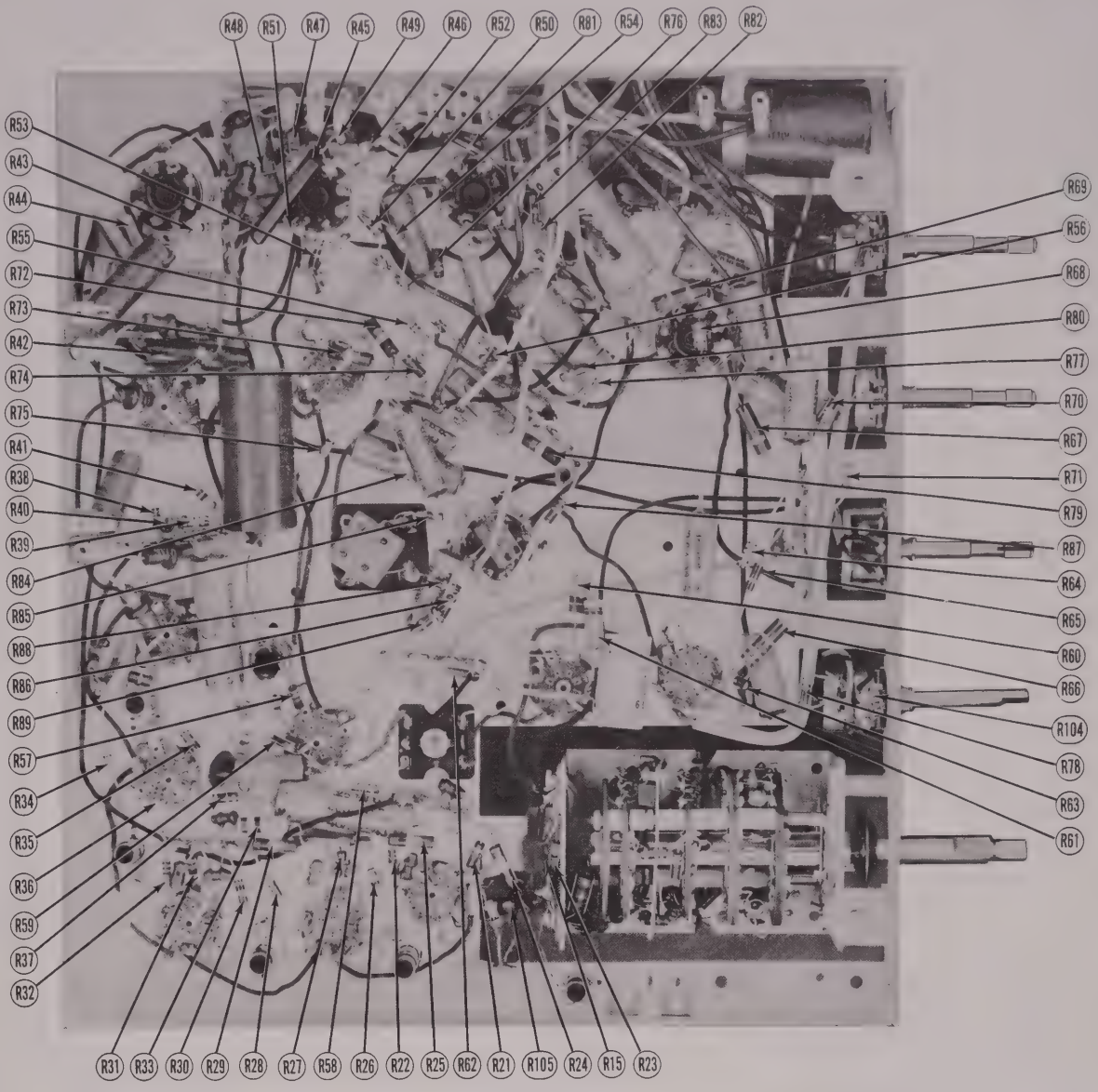
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in c clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



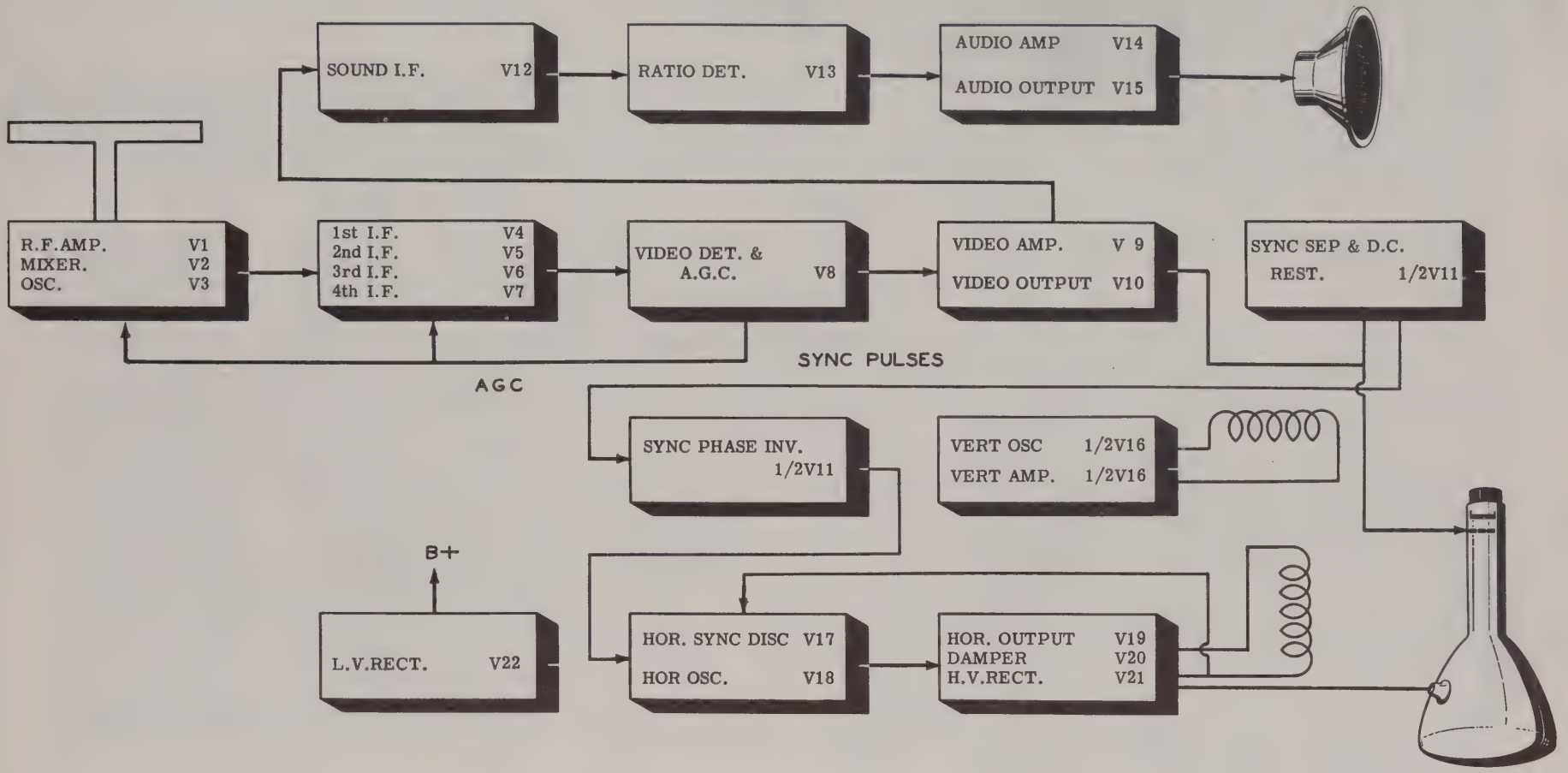
CHASSIS-TOP VIEW



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



BLOCK DIAGRAM

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.		6BH6	TCM	
V2	Mixer		6AJ8	TED	
V3	Oscillator		6C4	CBJ	
V4	1st Video IF Amp		6AU6	TAK	
V5	2nd Video IF Amp		6AU6	TAK	
V6	3rd Video IF Amp		6AU6	TAK	
V7	4th Video IF Amp		6AU6	TAK	
V8	Video Det.		6AL5	GAT	
V9	1st Vid. Amp.		6AU6	TAK	
V10	Video Output		6V6GT	TS	
V11	Sync. Sep.-DC Restorer-Sync. Phase Inverter		6N7GT	TAC	
V12	Sound IF Amp.		6SN7GT	SBD	
V13	Ratio Det.		6AL5	GAT	
V14	1st Audio Amp.		6AU6	TAK	
V15	Audio Output		6K6GT	TS	
V16	Vert. Osc.-Vert. Amp.		6SN7GT	SBD	
V17	Sync. Disc.		6AL5	GAT	
V18	Hor. Osc.		6SN7GT	SBD	
V19	Hor. Output		6BG6G	TSH	
V20	Damper		6W4GT	TW	
V21	HV Rectifier		1B3GT	KU	
V22	LV Rectifier		5U4G	GZ	
V23	Picture Tube		10BP4		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450						TVL-84	Filter Red
B	40	450							"
C	40	450						TVL-8	"
C2	15	10						TVL-66	Hor. Cent. Cont. Bypass
C3	100	6							Vert. Cent. Cont. Bypass
C4A	40	350						TVL-84	Filter Red
B	40	250							"
C	40	150							"
C5A	10	450							Filter Yellow
B	10	450							Filter Blue
C	10	450							Hor. Osc. Decoupling
C6A	10	450							"
B	10	450							Decoupling
C	10	450							Vert. Amp. Cath. Byp.
C6A	8	450						TVA-25	Decoupling
B	8	300							Filter
C	10	25						TVA-8	Output Cath. Bypass
C7	.5	50						TVA-13	Stabilizing Cap.
C8	6mf					JFDR-750			RF Coupling
C9	6mf					JFDR-750			"
C10	68					JFDR-750			AGC Filter
C11	680					JFDR-680			RF Screen Bypass
C12	500					JFDR-500			RF Bypass
C13	56					JFDR-560			RF Coupling
C14	.68								"
C15	25					JFDK-45			"
C16	.1								"
C17	.47								"
C18	.15					NPGR-1.5			"
C19	.15					NPGR-1.5			Osc. Coupling
C20	5000								Mixer Screen Bypass
C21	680								Osc. Feedback
C22	8								"
C23	500					JFDK-500			Osc. Fil. Bypass
C24	100		1468-0001	SW671	JFDK-100	MC.5-31		1FM-31	IF Coupling
C25	5000		1467-005	1W5D1	JFGM-505	MW.5-21		1FM-26	Mixer Plate Dec.
C26	1000		1468-001	1W5D1	JFGM-102	MW.5-21		1FM-21	AGC Filter
C27	.05	200	1468-0002	1W5D1		MW.5-21		1FM-21	"
C28	1000		1468-001	1W5D1	JFGL-102	MW.5-21		1FM-21	1st V. IF Decoupling
C29	100		1468-0001	SW671	JFDK-100	MC.5-31		1FM-31	IF Coupling
C30	1000		1468-001	1W5D1	JFGL-102	MW.5-21		1FM-21	AGC Filter
C31	1000		1468-001	1W5D1	JFGL-102	MW.5-21		1FM-21	2nd V. IF Decoupling
C32	1000		1468-001	1W5D1	JFGL-102	MW.5-21		1FM-21	2nd V. IF Fil. Bypass
C33	1000		1467-001	1W5D1	JFGL-102	MW.5-21		1FM-21	RF Bypass
C34	100		1468-0001	SW671	JFDK-100	MC.5-31		1FM-31	IF Coupling
C35	1000		1468-001	1W5D1	JFGL-102	MW.5-21		1FM-21	AGC Filter
C36	1000		1468-001	1W5D1	JFGL-102	MW.5-21		1FM-21	3rd V. IF Decoupling
C37	100		1468-0001	SW671	JFDK-100	MC.5-31		1FM-31	IF Coupling
C38	1000		1468-001	1W5D1	JFGL-102	MW.5-21		1FM-21	AGC Filter
C39	1000		1468-001	1W5D1	JFGL-102	MW.5-21		1FM-21	4th V. IF Decoupling
C40	100		1468-0001	SW671	JFDK-100	MC.5-31		1FM-31	IF Coupling
C41	5000		1468-001	1W5D1	JFGM-502	MW.5-21		1FM-21	AGC Filter
C42	10		1468-0001	SW671	JFDK-100	MC.5-31		ME-41	V. Diode Filter
C43	.05	200	PC-M-.05	2W5B5		ST-4-05		TM-15	Video Coupling
C44	.05	600	PC-M-.05	2W5B5		ST-4-05		TM-15	"
C45	.05	600	PC-M-.05	2W5B5		ST-4-05		TM-15	"
C46	.25	600	634-25	3TP2S5		ST-4-25		TC-2	"
C47	47	500	1468-0005	SW675	JFGK-500	MC.5-35		1FM-35	2nd V. Amp. Cath. Byp.
C48	.05	600	PC68-05	3T68S		ST-4-05		TM-15	Sync. Coupling
C49	1.5				NPGK-1.5				S. IF Coupling
C50	100		1468-0001	SW671	JFDK-100	MC.5-31		1FM-31	"
C51	.01	200	P47-01	2T47S1	JFC-333-01	ST-4-01		TM-11	S. IF Decoupling
C52	330		1468-0002	SW673	JFDK-330	MC.5-33		1FM-33	Diode Load Cap *
C53	330		1468-0002	SW673	JFDK-330	MC.5-33		1FM-33	" *
C54	.001		1468-001	1W5D1	JFGL-102	MW.5-21		1FM-21	De-emphasis
C55	.01	600	P68-01	3T68S1	JFC-333-01	ST-4-01		TM-11	Audio Coupling
C56	.01	600	P68-01	3T68S1	JFC-333-01	ST-4-01		TM-11	AF Screen Bypass
C57	.01	600	P68-01	3T68S1	JFC-333-01	ST-4-01		TM-11	Audio Coupling
C58	.01	600	P68-01	3T68S1	JFC-333-01	ST-4-01		TM-11	Output Plate Bypass
C59	.002	600	P68-002	3T68S	JFGM-202	ST-4-002		TM-22	Integrator Net.
C60	.005	600	P68-005	3T68S	JFGM-502	ST-4-005		TM-25	"
C61	4700	500							Vert. Osc. Grid Cap.

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C62	.1	600		P68-1	JTG1		ST-4-1	TM-1	Vert. Discharge
C63	.25	600		684-25	3T6P25		ST-6-25	TC-2	Vert. Sweep Coupling
C64	1500	500		1467-0015	1W5D15	CP2L-0015	MW.5-215	1FM-215	Hor. Sync. Coupling
C65	1500	500		1467-0015	1W5D15	CP2L-0015	MW.5-215	1FM-215	" " "
C66	.02	600		P68-02	3T68S		ST-6-02	TM-12	Voltage Divider
C67	.005	600		P68-005	3T6D5	CP2M-005	ST-6-005	TM-25	AFC Feedback
C68	.005	600		P68-005	3T6D5	CP2M-005	ST-6-005	TM-25	AFC Filter
C69	.005	600		P68-005	3T6D5	CP2M-005	ST-6-005	TM-25	" "
C70	.05	600							Hor. Osc. Feedback
C71	Trim	600							Fixed Trimmer
C72	330			1467-0004	5R5T4		MOS.5-34	MS-34	Hor. Discharge
C73	.1	200		P2W8-1	GT2P1		ST-2-1	TM-1	Pic. Tube Cath. Dec.
C74	330	500		1467-0004	5R5T4		MOS.5-34	MS-34	Hor. Sweep Coupling
C75	.01	600		P68-01	3T6S1	CP2-335-01	ST-6-01	TM-11	Hor. Amp. Screen Bypass
C76	.033	600		P68-033					Damper Filter
C77	.1	600		P68-1	GT6P1		ST-6-1	TM-1	" "
C78	500	1,000				410-500			HV Filter
C79	.01	600		P68-01	GT6S1		ST-6-01	TM-11	Line Filter
C80	.01	600		P68-01	3T6S1		ST-6-01	TM-11	" "
C81	680					CP2K-750			RF Bypass

* When either item C52 or C53 are replaced, replace both with capacitors of equal values.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	25B785	WL13-137	AM-63-2	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A Per Instructions
C	Switch		Not Req.	76-1	SW-4	" " " "
R2A	50KΩ	½	25B784	WL11-143	AM-44-5	Brightness control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R2A Per Instructions
R3	25000Ω	2	25B783		43-2500	Contrast control (Wire Wound)
R4A	1 Meg.	½	25B786			Vert. hold control (Dual Concentric)
B	50KΩ	½				Horiz. hold control " " "
R5	50000Ω	2	25B789			Vert. Linearity control
R6	2.5 Meg.	2	25B768			Height control
R7	20Ω	2	25B707	W-20	43-20	Horiz. centering control (Wire Wound)
R8	20Ω	2	25B706	W-20X10	43-20CT	Vert. centering control (Wire Wound)
R9	2500Ω	4	25B708		10-2500	Focus control (Wire Wound)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R10	22KΩ	½	RC20AE223M		RF Grid 20%
R11	100Ω	½	RC20AE101M		RF Cathode 20%
R12	10KΩ	1	RC30AE103M		RF Plate 20%
R13	33KΩ	½	RC20AE333M		RF Screen 20%
R14	1 Meg.	½	RC20AE105M		Mixer Grid 20%
R15	4700Ω	½	RC20AE472K		Mixer Plate Decoupling.
R16	82KΩ	½	RC20AE823M		Mixer Screen 20%
R17	4700Ω	½	RC20AE472K		Mixer Grid Shunt
R18	22KΩ	½	RC20AE223K		Osc. Grid
R19	470Ω	½	RC20AE471K		Osc. Cathode
R20	6800Ω	1	RC30AE682M		Osc. Plate 20%
R21	22KΩ	½	RC20AE223K		1st Video IF Grid
R22	2200Ω	½	RC20AE222K	BTS-2200	1st Video IF Decoupling
R23	1 Meg.	½	RC20AE105K	BTS-1 Meg.	AGC Network
R24	100KΩ	½	RC20AE104K	BTS-100K	" "
R25	100KΩ	½	RC20AE104K	BTS-100K	" "
R26	5600Ω	½	RC20AE562K	BTS-5600	2nd Video IF Grid
R27	68Ω	½	RC20AE680K		2nd Video IF Cathode
R28	2200Ω	½	RC20AE222K	BTS-2200	2nd Video IF Decoupling
R29	100KΩ	½	RC20AE104K	BTS-100K	AGC Network
R30	470Ω	½	RC20AE472K		3rd Video IF Grid
R31	68Ω	½	RC20AE680K		3rd Video IF Cathode
R32	2200Ω	½	RC20AE222K	BTS-2200	3rd Video IF Decoupling
R33	100KΩ	½	RC20AE104K	BTS-100K	AGC Network
R34	5600Ω	½	RC20AE562K	BTS-5600	4th Video IF Grid
R35	680Ω	½	RC20AE682K		4th Video IF Plate
R36	2200Ω	½	RC20AE222K	BTS-2200	4th Video IF Decoupling
R37	68Ω	½	RC20AE680K		4th Video IF Cathode
R38	220KΩ	½	RC20AE224K	BTS-220K	AGC Network
R39	470KΩ	½	RC20AE474K	BTS-470K	" "
R40	5600Ω	½	RC20AE562K	BTS-5600	Video Det. Diode Load
R41	1 Meg.	½	RC20AE105K	BTS-1 Meg.	1st Video Amp. Grid
R42	33000Ω	2	RC20AE333K	BT-2-3300	1st Video Amp. Plate
R43	1 Meg.	½	RC20AE105K	BTS-1 Meg.	2nd Video Amp. Grid
R44	680Ω	½	RC20AE681K	BTS-680	2nd Video Amp. Cathode
R45	47000Ω	2	RC20AE472K	BT-2-4700	2nd Video Amp. Plate
R46	47KΩ	½	RC20AE473K	BTS-47K	Picture Tube Grid
R47	27KΩ	½	RC20AE273K	BTS-27K	Voltage Divider
R48	1 Meg.	½	RC20AE105K	BTS-1 Meg.	Sync. Sep. Plate
R49	270KΩ	½	RC20AE274K	BTS-270K	Sync. Sep. Cathode
R50	39000Ω	½	RC20AE392K	BTS-3900	Sync. Phase Inv. Plate
R51	3900Ω	½	RC20AE392K	BTS-3900	" " " "
R52	1 Meg.	½	RC20AE105K	BTS-1 Meg.	Sync. Phase Inv. Grid
R53	3900Ω	½	RC20AE392K	BTS-3900	Sync. Phase Inv. Cathode
R54	15KΩ	½	RC20AE153K	BTS-15K	Integrator
R55	8200Ω	½	RC20AE822K	BTS-8200	"
R56	8200Ω	½	RC20AE822K	BTS-8200	"
R57	150KΩ	½	RC20AE154K		Sound IF Grid
R58	33KΩ	½	RC20AE333K	BTS-33K	Sound IF Decoupling
R59	12KΩ	½	RC20AE123K	BTS-12K	Voltage Divider
R60	9000Ω	1		BTA-10K-5%	Ratio Det. Diode Load 5%
R61	9000Ω	1		BTA-10K-5%	" " " " 5%
R62	33KΩ	½	RC20AE333K	BTS-33K	De-emphasis
R63	330Ω	½	RC20AE331K	BW-1-330	AF Cathode
R64	470KΩ	½	RC20AE474K	BTS-470K	AF Plate
R65	2.2 Meg.	½	RC20AE225K	BTS-2.2 Meg.	AF Screen
R66	68KΩ	1	RC30AE683K	BTA-68K	Voltage Divider
R67	1000Ω	1	RC30AE102K	BW-1-1000	Filter
R68	470KΩ	½	RC20AE474K	BTS-470K	Output Grid
R69	680Ω	1	RC30AE681K	BTA-680	Output Cathode

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES
R70	180KΩ	½	RC20AE184K	BTS-180K	Voltage Divider
R71	15KΩ	½	RC20AE153K	BTS-15K	" "
R72	100KΩ	½	RC20AE104K	BTS-100K	Sync. Disc. Load
R73	100KΩ	½	RC20AE104K	BTS-100K	" " "
R74	4.7 Meg.	½	RC20AE475K	BTS-4.7 Meg.	Sync. Disc. Load
R75	5600Ω	½	RC20AE562K	BTS-5600	AFC Feedback Network
R76	1.2 Meg.	½	RC20AE125K	BTS-1.2 Meg.	Vert. Osc. Grid
R77	6.8 Meg.	½	RC20AE685K	BTS-6.8 Meg.	Voltage Divider
R78	1.2 Meg.	½	RC20AE125K	BTS-1.2 Meg.	" "
R79	100KΩ	½	RC20AE104K	BTS-100K	" "
R80	1.5 Meg.	½	RC20AE155K	BTS-1.5 Meg.	Vert. Osc. Plate
R81	2.2 Meg.	½	RC20AE225K	BTS-2.2 Meg.	Vert. Amp. Grid
R82	560Ω	½	RC20AE561K	BTS-560	Vert. Amp. Cathode
R83	3300Ω	½	RC20AE332K	BTS-3300	Vert. Peaking
R84	470KΩ	½	RC20AE474K	BTS-470K	Horiz. Osc. Grid
R85	6800Ω	½	RC20AE682K	BTS-6800	Horiz. Osc. Plate
R86	1000Ω	½	RC20AE102K	BTS-1000	Horiz. Osc. Cathode
R87	68KΩ	½	RC20AE683K	BTS-68K	Horiz. Osc. Grid
R88	270KΩ	½	RC20AE274K	BTS-270K	Horiz. Osc. Plate
R89	47000Ω	½	RC20AE472K	BTS-4700	Horiz. Peaking
R90	22000Ω	½	RC20AE222K	BTS-2200	Filter
R91	22000Ω	1	RC30AE222K	BW-1-2200	Filter
R100	4700Ω	2	RC40AE472K	BT-2-4700	Series Focus Control
R101	1000Ω	20	24BH102D	DG-1000	Filter (Wire Wound)
R102	1100Ω	20	24BH112D		Filter (Wire Wound)
R103	8200Ω	10	24B0822E	AB-8000	Bleeder (Wire Wound)
R104	47KΩ	½	RC20AE473K	BTS-47K	Voltage Divider
R105	330Ω	½	RC20AE331K		Parasitic Supp.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TRUETONE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	117VAC @ 1.80A	700VCT @ .23A	5VAC @ 3A	5VAC @ 2A	52C170	P-8153 † ‡	TP-410	
		SEC. 4 6.3VAC @ 7.5A						

‡ Drill new mounting holes.
† Add series resitor to reduce plate voltage.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: TRUETONE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	NOTES
T2	40Ω		50B411				Hor. Osc. Coil
T3	200Ω	1200Ω	55B115	A-8111	T80-1	A-3000	Vert.Block Osc.Trans.
T4	410Ω Tap @ 170Ω	SEC. 1 10Ω Tap @ .5Ω SEC. 2 0Ω	55C113	A-8117	TPB-1		Hor. Output Trans.
T5	590Ω	72Ω	55C114	A-8115	TS0-1	A-3035	Vert.Output Trans.
T6A	14Ω		53B140	DY-1			Hor. Deflection Yoke
B	68Ω						Vert. Deflection Yoke
T7	260Ω		51A1065	FC-10			Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
T8	9KΩ	3.2Ω	280Ω	.4Ω	Part of 85C079	A-8114	RO-16	A-2900	

SPEAKER

ITEM No.	RATING: FIELD RES.	RATING: V. C. IMP.	REPLACEMENT DATA: TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	65Ω	3.2Ω	85C079		$	$ Supplied on request give field resistance & current.
	CONE DIA.	V. C. DIA.				
SP2	5 3/4"	9/16"				

TRUETONE MODEL D2983

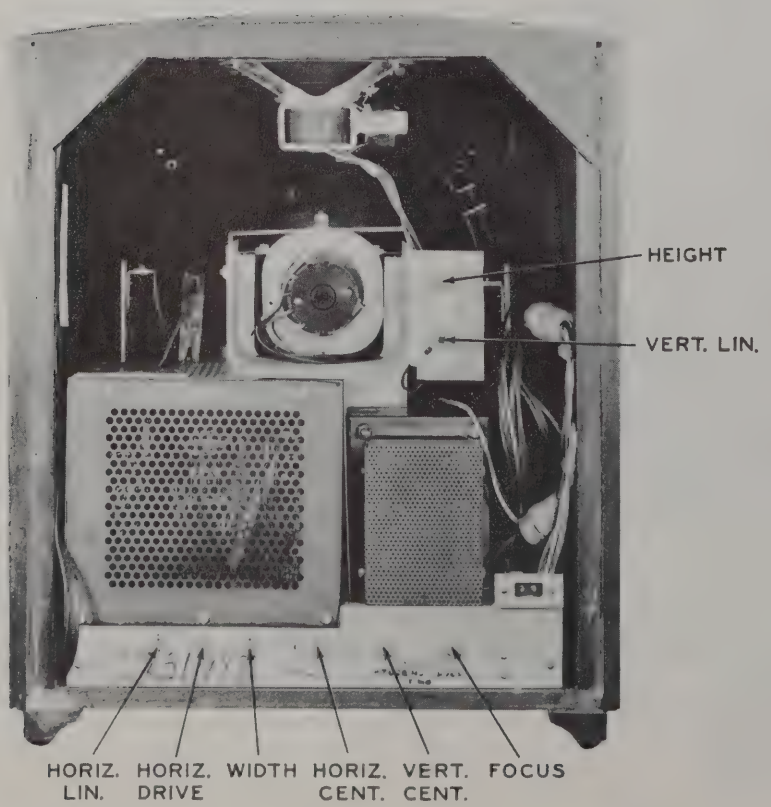
PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	
L1	Ant. Coil	0Ω				Part of M1
L2	Ant. Coil	0Ω				Part of M1
L3	Ant. Input	0Ω				Part of M1
L4	Fil. Choke	.1Ω				Part of M1
L6	1st Video IF	.1Ω		50A372-1		
L7	2nd Video IF	.1Ω		50A372-1		
L8	3rd Video IF	.1Ω		50A372-1		
L9	4th Video IF	.1Ω		50A372-1		
L10	5th Video IF	.1Ω		50A372-1		
L11	Peaking	9.8Ω		51A1079		Wound on 39KΩ resistor.
L12	Peaking	12Ω		51A1080		Wound on 1 Meg resistor.
L13	Peaking	10Ω				Wound on 56KΩ resistor.
L14	Peaking	7Ω		51A1082		Wound on 1 Meg. resistor.
L15	Peaking	8.5Ω		51A1086		Wound on 1 Meg. resistor.
L16	Peaking	7Ω		51A1082		Wound on 1 Meg. resistor.
L17	4.5MC Sound Trap	4.5Ω		51A1037		
L18	Ratio Det. Trans.	4.5Ω	1Ω	50B406		
L19	Width Control	.2Ω		51B1072		
L20	Hor. Linearity	32Ω		51B1071		

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M1	Tuner	1C727	Complete with Tubes
M2	Ion Trap	21B083	
M3	Fuse	39A334	Types 3AG .25A
	Knob	15B148-2	Volume, Brightness and Contrast
	Knob	15B147-2	Horizontal (Rear Section)
	Knob	15B150-2	Channel Selector (Front Section)
	Knob	15B151-1	Fine Tuning (Rear Sections)
	Safety Glass	22C220	

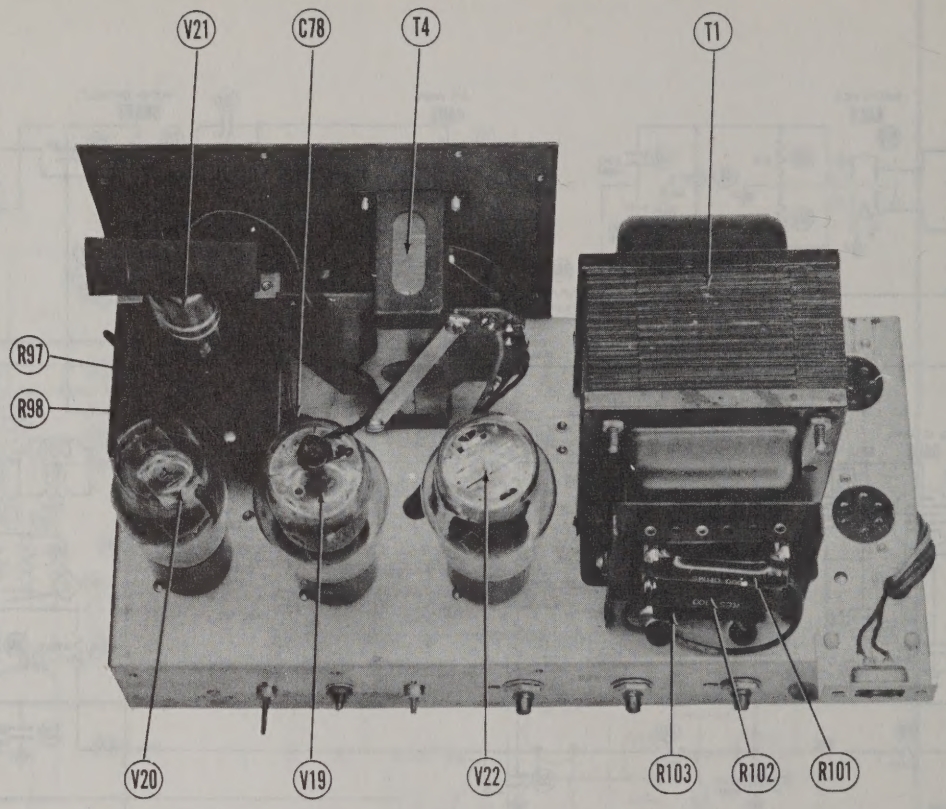


VERTICAL SWEEP CIRCUIT ADJUSTMENT

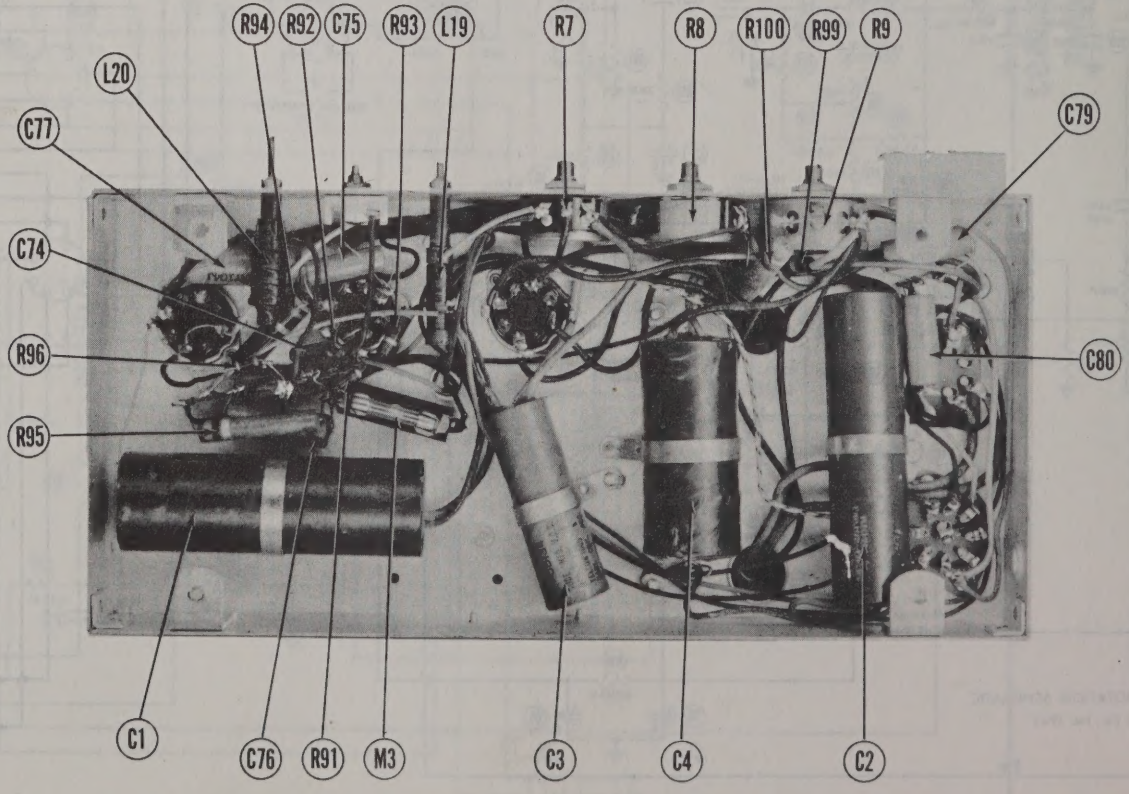
1. Turn the vertical centering and height controls so test pattern fills mask properly in the vertical plane.
2. Adjust the vertical linearity control for proper vertical symmetry of test pattern. Slight readjustment at vertical centering and height controls may be necessary.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENT

1. Turn the horizontal drive adjustment (B1) clockwise as far as possible without crowding the right hand side of the test pattern. Insufficient horizontal drive will cause the raster to fall short of filling the mask horizontally.
   If it is not possible to "hold" the test pattern horizontally by adjustment of the horizontal hold control, set the horizontal hold control at the midpoint of its rotation and adjust the horizontal oscillator adjustment screw (B2) until picture "sync" horizontally.
2. Adjust the horizontal centering control and the width adjustment (B3) until test pattern fills the mask properly in the horizontal plane.
3. Set the horizontal linearity adjustment (B4) so the test pattern is symmetrical from left to right. Slight readjustment of the horizontal drive trimmer (B1) may be necessary when making this adjustment.



POWER SUPPLY CHASSIS-TOP VIEW



POWER SUPPLY CHASSIS-BOTTOM VIEW